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BULLETIN No. 385. JANUARY, 1921

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.56, 19th, 10 A
Minimum reduced to freezing,	29.10, 15th, 1 A
Reduced maximum reading	30.90, 29th, 10A
Reduced minimum reading,	29.40, 15th, 1 A
Mean semi-daily reduced	30.111
Monthly range	1.50

***Air Temperature.** In Degrees Fahr.

Highest	50.0, 2d, 3 P
Lowest	−6.0, 19th, 7 A
Mean hourly	26.6
Mean of means of max. and min.	26.8
Mean sensible (wet bulb)	22.5
Monthly range	56.0
Highest mean daily	43.6, 2d
Lowest mean daily	4.0, 19th
Mean maximum	36.8
Mean minimum	16.7
Mean daily range	20.1
Greatest daily range	35.5, 20th
Least daily range	5.0, 30th

Humidity.

Mean dew point	16.6
Mean force of vapor	.147
Mean relative humidity	72.2

Precipitation. In inches.

Total precipitation, in inches	2.00
Total snow, in inches	7½
Number of days on which .01 inch or more rain fell	8

Days of Sleighing, 5

*Temperature in ground shelter.

**Reduced to freezing and sea-level.

Wind.

Total movement	5616 m
Greatest daily movement	465m, 25th
Least daily movement	41m 1st
Mean daily movement	181m
Mean hourly velocity	7.5 m

Maximum pressure per square foot, 10.0 lbs = 45m per hour, 17th, 12M, W.N.W.

Maximum velocity for 5 minutes, 30m per hour, 17th, 9 A, W.N.W.

Prevailing direction, West.

Summary.

North Northwest	13 per cent.
West Northwest	13 " "
South Southwest	26 " "
Northwest	13 " "
West	16 " "
Other directions	19 " "

Weather.

Mean cloudiness observed	42 per cent
Total cloudiness recorded by the Sun Thermometer	127 hours = 43 per cent.
Number of clear days	10
Number of fair days	11
Number of cloudy days	10

Bright Sunshine.

Number hours recorded, 167 hrs. = 57 per cent.

Rain. 1st, 2d, 5th. 7th, 14th, 21st, 23d, 30th, 31st.

Snow, 7th, 14th, 17th, 20th. 30th, 31st.

Gales. 45m. 17th, W.N.W.; 43m. 18th, N.W. 36m, 23d, W.N.W.. 37m. 24th. N.W.

639.2
M38cm
385-468

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Depet.	Mean Sensible Wet Bulb.	
1	30 28	30.02	30 227	38.0	12 P	4.5	7 A	21.3	22.7	19.7	6.3
2	30.02	29 62	29 737	50.0	3 P	38 0	6 A	44.0	43 6	40.0	5 0
3	29.98	29.77	29.925	44 5	3 P	32.0	12 P	38.3	39.1	32.5	8.1
4	30 12	29 83	29 975	47.0	3 P	29 0	9 A	38.0	37 6	32.5	5.4
5	29 83	29.59	29 684	42.0	3 P	30.5	9 A	36.3	36.3	32.5	0.8
6	30.18	29 71	30 007	37.0	12 M	25.5	12 P	31 3	33 8	28.7	1.2
7	30.24	29 91	30.125	31.0	4 P	14.5	9 A	22.7	24.1	20 5	6.1
8	29.97	29.72	29.800	41 0	3:30 P	26.5	3:30 A	33.7	30.3	26.3	3 4
9	30 34	29.97	30.234	37 0	3 P	19.0	12 P	28.0	29 6	24.7	7.4
10	30.37	30 22	30.293	37 5	2:30 P	9.5	7 A	23 5	22 3	16.0	6.5
11	30.22	30.06	30.120	37.0	3 P	13.0	7:30 A	25.0	26.9	20.3	8.0
12	30.19	29.99	30.059	35.0	3 P	18 5	12 P	26.7	29.5	26 0	3.1
13	30 53	30 19	30 440	25.0	4 P	7 0	7:30 A	16.0	15.8	11.0	8.2
14	30.41	29 41	29.820	48 0	11 P	17.0	0 A	32.5	27.7	32 7	0.0
15	29.83	29.40	29 656	47.0	0 A	28.0	12 P	37.5	34.9	29.0	0.4
16	30.02	29.67	29.880	38.0	2:30 P	25 5	8:30 A	31.7	31.0	26 0	7.6
17	30.44	29.67	30.078	34.0	2:30 A	9.0	12 P	21.5	20 5	16.3	7.0
18	30 81	30.44	30.701	13.0	2:30 P	−3 0	12 P	5.0	4.2	1 0	8.9
19	30.90	30.78	30.852	18 5	5 P	−6.0	7 A	6 3	4.0	1.5	8.8
20	30.78	30.14	30 350	41.0	12 P	5.5	0 A	23.3	24.0	23 5	0 6
21	30.19	29.99	30 096	49 0	12 P	36.0	8 A	42 5	42.0	35.7	1.0
22	30.15	30 01	30.067	48.5	0 A	27.5	10:30 P	38 0	37 5	32.5	0.0
23	30.01	29 68	29 774	43.5	12 M	28.0	0 A	35 7	35.0	31.3	5.9
24	30 09	29 90	29.949	29.0	0 A	3 0	12 P	16.0	21.1	15.7	6.7
25	30.29	30.09	30.186	15.5	2:30 P	−2 5	6 A	6.5	6.3	3.7	8.9
26	30 45	30.29	30.380	26 0	4 P	5.0	4 A	15 5	13.4	8.5	9.1
27	30.46	30.25	30.334	38.0	4 P	3.0	2:30 A	20 5	18.3	12.3	8.8
28	30 37	30.28	30 318	40 5	4 P	12.5	4 A	26.5	26.3	20.0	9.0
29	30.34	30.09	30.198	39 0	3:30 P	18 0	7:30 A	28.5	29 1	23.5	8.3
30	30.09	29.91	29.954	36.0	2 P	31.0	7 A	33.5	33.0	31 7	1.7
31	30.39	29.99	30.215	34.5	3 A	14.0	11 P	24.3	25.8	20.7	4.5

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DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	14.0	.124	78.0	S.S.W.	41	0.5	10	11 P	8 P	10 P	.07	
2	35 0	.240	73.5	S.S.W.	289	3.5	26	10 A	2 A	8 A	.02	
3	26.0	.254	65 0	W.N.W.	240	3.5	26	7 A				
4	27.0	.213	73.0	S.S.W.	160	1.5	17	6 P				
5	29 5	.195	85.5	W.S.W.	87	0.0	—	—	1 P	11 P	.29	
6	24.0	.178	75.5	N.N.W.	205	3.0	24	5 P				
7	16.0	.122	78.5	N.N.E.	103	1.5	17	0 A	5 P	11 P	.26	1½
8	21.5	.159	75.5	W.	108	2.5	22	2 P				
9	20.0	.148	74.5	W.N.W.	176	4.0	28	7 A				
10	8.0	.107	63.5	W.	58	0.5	10	12 P				
11	12.5	.133	64.5	N.N.W.	84	0.0	—	—				
12	22.5	.152	83.5	N.W.	144	5.5	33	7 P				
13	4.0	.082	67 0	N.N.W.	205	2.0	20	12 M				
14	31.5	.204	91.5	S.S.W.	93	4.5	30	9 P	1 A	11 P	.94	2
15	21.5	.187	61.5	W.	256	5.0	32	1 A				
16	19.5	.162	67.5	S.S.W.	178	4.0	28	7 P				
17	9 0	.106	66.5	W.N W.	454	10.0	45	12 M	2 A	9 A	T	T
18	−4.5	.049	73.0	N.W.	354	9.0	43	6 A				
19	−7.0	.054	62.5	N.N.W.	79	2.5	22	12 M				
20	19.5	.138	82.0	S.W.	237	6.0	35	10 A	5 A	7 A	T	T
21	30.0	.242	71.0	S.S.W.	161	1.0	14	2 A	6 P	8 P	T	
22	28.5	.203	79.0	W.	110	0.0	—	—				
23	24.0	.198	71 0	W.	226	6 5	36	7 P	0 A	10 A	.03	
24	9.0	.104	68.0	N.W.	407	7.0	37	10 A				
25	−4.5	.058	62.5	N.W.	465	4.0	28	10 A				
26	−3.0	.075	53.0	N.	233	3.0	24	1 P				
27	4.5	.092	64 0	W.N.W.	65	0.0	—	—				
28	12.0	.128	62.0	S E.	94	0.0	—	—				
29	18.5	.144	74.5	S.S.W.	72	1.0	14	12 M				
30	30 0	.184	92 5	S.S.W.	98	0.0	—	—	3 A	12 P	.37	3½
31	16 0	.125	77.5	N.N.E.	134	2.5	22	2 P	0 A	6 A	.02	½

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was somewhat warmer than normal, and the precipitation was comparatively small. The snow on the ground at the beginning of the month soon melted and the ground was practically free from snow nearly the whole month. A few light snowstorms occurred but the warm days which followed each storm soon left the ground bare. Two short periods of zero weather occurred after the middle of the month.

The records of the several weather elements show the following features of interest: The mean barometer was rather high, and the range of pressure nearly normal. An exceptionally high barometer was noted on the 19th, which was also the coldest day of the month. Variations in pressure were quite marked and resulted in a total wind movement considerably greater than the normal. Nearly all the wind was from the westerly point of the compass.

The mean temperature was about two degrees higher than the normal and the first part of the month was the warmest period. The range of temperature was nearly normal.

The total precipitation was only about sixty per cent of the normal, and the greater part occurred as rain.

The mean dew point was rather low and the relative humidity considerably below the normal.

On three dates the daily wind movement exceeded four hundred miles.

The amount of sunshine was comparatively large.

J. E. OSTRANDER, Meteorologist.

H. W. POOLE, Observer.

CORRECTIONS :

Bulletin 383. Total precipitation should read 5.62 in.
Bulletin 384. Total annual precipitation should read 51.04 in.

BULLETIN No. 386. FEBRUARY, 1921

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.20, 1st, 10 A. 19th, 8 A.
Minimum reduced to freezing,	29.12, 11th, 6 P
Reduced maximum reading	30.52, 1st, 10A, 19th, 8 A.
Reduced minimum reading,	29.43, 11th, 6 P
Mean semi-daily reduced	30.083
Monthly range	1.09

***Air Temperature.** In Degrees Fahr.

Highest	55.0, 16th, 4 P
Lowest	−4.0, 25th, 7 A
Mean hourly	27.7
Mean of means of max. and min.	27.5
Mean sensible (wet bulb)	23.0
Monthly range	59.0
Highest mean daily	40.1, 16th
Lowest mean daily	11.0, 25th
Mean maximum	36.9
Mean minimum	18.2
Mean daily range	18.7
Greatest daily range	37.0, 26th
Least daily range	6.0, 11th

Humidity.

Mean dew point	16.2
Mean force of vapor	.149
Mean relative humidity	68.4

Precipitation. In inches.

Total precipitation, in inches	2.38
Total snow, in inches	20½
Number of days on which .01 inch or more rain fell	9
Days of Sleighing, 16	

*Temperature in ground shelter.

**Reduced to freezing and sea-level.

Wind.

Total movement	3835 m
Greatest daily movement	337m, 17th
Least daily movement	27m 26th
Mean daily movement	137m
Mean hourly velocity	5.7 m
Maximum pressure per square foot, 10.5 lbs= 46m per hour, 14th, 5 P, N.N.W.	
Maximum velocity for 5 minutes, 27m per hour, 17th, 2 P, N.W.	
Prevailing direction, Northwest.	

Summary.

North Northeast	18 per cent.
West Northwest	14 " "
South Southwest	14 " "
Northwest	14 " "
North	21 " "
Other directions	19 " "

Weather.

Mean cloudiness observed	63 per cent
Total cloudiness recorded by the Sun Thermometer	119 hours = 40 per cent.
Number of clear days	10
Number of fair days	10
Number of cloudy days	8

Bright Sunshine.

Number hours recorded, 177 hrs. = 60 per cent.

Rain, 5th,6th, 23d, 27th, 28th.

Snow, 2d, 7th, 9th, 11th, 18th, 20th, 23d, 27th

Gales. 46m. 14th, N.N.W.; 40m, 17th, N.W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30 52	30.38	30.482	32.0	3:30 P	5 0	8:30 A	18.5	14.5	7.3	8.7
2	30.39	29.91	30.095	34.0	3 P	7.0	8 A	20.5	20.8	18.3	1.6
3	29.91	29.74	29.771	35.5	4 P	28.0	7 A	31.7	31.9	28.3	6.3
4	30.14	29.87	30.065	36.0	5 P	18.0	7:30 A	27.0	29.3	21.5	8.7
5	30.06	29 67	29.838	40.0	3 P	32.0	0 A	36.0	35.1	32.5	3.8
6	30.12	29.64	29.918	43.0	1 P	33 0	5 A	38.0	37.4	33 5	7.0
7	30.28	30.11	30.180	40.5	3 P	29 0	9 A	34 7	34.3	28.5	6.7
8	30.32	30.08	30.214	35.0	4 P	20.0	12 P	27.5	28.7	23.5	8.3
9	30.32	29.93	30 087	28.0	12 P	12.0	7 A	20.0	21.7	20.0	0.0
10	30.08	29.86	29.958	37.5	4 P	27.0	12 P	32.3	32.5	29.7	4.2
11	29.86	29.43	29.512	34.0	12 M	28.0	12 P	31 0	31 7	28.5	5.0
12	29.95	29.50	29.862	34.0	3 P	14.0	12 P	24.0	25.0	17.7	8.1
13	30.07	29.95	30.048	42.5	2:30 P	6.0	7:30 A	24.3	22.2	15.7	9 3
14	30.24	29.71	29.968	40.5	1:30 P	19.0	12 P	29.7	29 5	24.0	4.5
15	30.40	30.19	30.322	37.0	4:30 P	8.5	7 A	22.7	22.3	17.0	8.9
16	30 19	29.81	29.998	55.0	4 P	25.0	7:30 A	40.0	38.1	32.0	9.2
17	30.11	29.75	29.906	46.0	12 M	30.0	12 P	38.0	40.1	31.7	9.5
18	30.49	30 11	30.370	35.5	3 P	19.0	12 P	27.3	27.5	22 0	9 2
19	30.52	30.41	30.488	40.0	3 P	13.0	5 A	26.5	25.9	20.7	7.9
20	30.44	30.16	30.278	28.0	4 A	19.0	12 P	23.5	23 9	20.7	0.0
21	30.48	30.20	30.413	34.0	4 P	11.0	7 A	22.5	19.9	15 0	10.1
22	30.47	30.23	30.330	35.0	3 P	12.5	2 A	23.7	25.5	22.7	7.2
23	30.23	29.66	29.824	38.0	8 P	30.0	4 A	34.0	34.4	32.0	1.6
24	29.90	29.62	29.696	36.0	1 A	12.0	12 P	24.0	27.3	20.5	8.5
25	30.19	29.90	30.044	27.0	3 P	−4.0	7 A	11.5	11.0	3.7	10.3
26	30.41	30.19	30.333	34.0	3 P	−3 0	7 A	15.0	17.5	13.5	7.1
27	30.48	30.28	30.437	35.0	12 P	27.0	6 A	31.0	31.6	30.3	0 0
28	30.28	29.82	29.904	40.5	4 P	32.0	6 A	36.3	36.1	33.5	5.6

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Total in Inches. Snow.
1	−2.5	.069	58.5	N.N.E.	93	0.0	—	—				
2	14.5	.118	81.5	N.N.E.	31	0.0	—	—	8 P	10 P		T
3	23 0	.173	72.5	W.S.W.	120	3.0	24	11 P				
4	12.5	.137	62.5	W.N.W.	135	1.5	17	1 A				
5	30.5	.196	85.5	W.S.W.	51	0.0	—	—	8 P	12 P	.15	
6	27.5	.222	69.5	W.N.W.	197	3.5	26	12 M	0 A	2 A	.08	
7	24.0	.173	74.0	W.S.W.	103	2.0	20	1 A	5 P	10 P	.16	1¾
8	15.5	.140	65.0	N.	135	2.5	22	12 M				
9	13.0	.144	70 5	N.N.E.	33	0.0	—	—	9 A	10 P	.06	¼
10	25.5	.183	77.5	N.N.E.	42	0.0	—	—				
11	26.0	.168	84.5	N.	111	1.5	17	8 P	0 A	11 P	.53	6½
12	9.0	.114	62.0	N.	90	1.0	14	6 P				
13	9.0	.111	68.5	N.N.W.	48	1.0	14	5 P				
14	14.5	.146	67.5	W.	239	10.5	46	5 P				
15	9.0	.114	64.5	N.N.W.	115	2.0	20	1 A				
16	24.0	.224	62.5	S.S.W.	99	1.5	17	12 P				
17	24.0	.212	62.0	N.W.	337	8.0	40	2 P				
18	12.5	.140	58.0	N.W.	278	5.0	32	1 A	10 A	11 A		T
19	12.5	.132	61.0	W.S.W.	79	0 5	10	11 A				
20	14.5	.124	70.5	N.	198	5.0	32	12 P	1 A	11 P	.97	12
21	7.0	.100	62.0	N.	275	4.5	30	8 A				
22	14.5	.144	63.0	N.N.E.	76	0.0	—	—				
23	27.5	.203	73.0	S.W.	215	5.5	33	11 A	12 M	1 P	.03	T
24	12.0	.130	60.5	N.W.	282	2.5	22	1 P				
25	−7.5	.063	53.0	W.N.W.	72	0.0	—	—				
26	5.5	.101	68.0	W.N.W.	27	0.0	—	—				
27	26.5	.180	81.5	N.W.	96	1.0	14	11 P	5 A	12 P	.15	T
28	29.5	.210	77.5	N.	258	1.5	17	6 A	0 A	8 A	.25	

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month, while generally seasonable, was more pleasant than usual at this time of year. There was but little extremely cold weather and a comparatively small wind movement. The amount of sunshine was above the normal and the precipitation rather small. The most noticeable feature was the large snowfall on the 20th, which, however, was not as large as the snowstorm of Feb. 5—6, 1920.

Comparing the records of the several weather elements with their normals, the following features of interest are shown: The mean barometer was rather high and the range of pressure much smaller than usual. The total wind movement was only about three-fourths of the normal owing to the rather steady barometer. Most of the wind was from the northerly points of the compass. Only two moderate gales were recorded.

The mean temperature was more than three and one-half degrees above the normal, making it a comparatively mild month. A few hours of zero weather was noted near the end of the month. The maximum and minimum temperatures were both about four degrees higher than their normals, leaving the range practically normal.

The mean dew point was nearly normal and the relative humidity rather low.

The total precipitation was about three-fourths of the usual amount and most of it occurred as snow. There was from fair to poor sleighing during about one-half of the month.

J. E. OSTRANDER, Meteorologist.

H. W. POOLE, Observer.

BULLETIN No. 387. MARCH, 1921

Meteorological Observations

AT THE

MASSACHUSETTS

AGRICULTURAL EXPERIMENT

STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.34, 23d, 8 A
Minimum reduced to freezing,	29.35, 28th, 4 P
Reduced maximum reading	30.65, 23d, 8A
Reduced minimum reading,	29.64, 28th, 4 P
Mean semi-daily reduced	30.151
Monthly range	1.01

***Air Temperature.** In Degrees Fahr.

Highest	79.5, 21st, 11 A
Lowest	16.0, 5th, 6 A; 19th 6 A
Mean hourly	42.7
Mean of means of max. and min.	42.5
Mean sensible (wet bulb)	37.9
Monthly range	63.5
Highest mean daily	61.3. 21st
Lowest mean daily	24.5, 5th
Mean maximum	53.3
Mean minimum	31.8
Mean daily range	21.5
Greatest daily range	42.0, 28th
Least daily range	6.0, 8th

Humidity.

Mean dew point	32.9
Mean force of vapor	.274
Mean relative humidity	72.4

Precipitation. In inches.

Total precipitation, in inches	3.57
Number of days on which .01 inch or more rain fell	16

*Temperature in ground shelter.

**Reduced to freezing and sea-level.

Wind.

Total movement	6486 m
Greatest daily movement	388m, 25th
Least daily movement	45m 8th
Mean daily movement	209m
Mean hourly velocity	8.7 m
Maximum pressure per square foot, 12.5 lbs= 50m per hour, 29th, 2 A, N.	
Maximum velocity for 5 minutes, 28m per hour, 29th, 1 A, N.	
Prevailing direction, West Southwest.	

Summary.

South Southwest	36 per cent.
North	13 " "
Northwest	10 " "
North Northwest	10 " "
West Southwest	10 " "
Other directions	21 " "

Weather.

Mean cloudiness observed	59 per cent
Total cloudiness recorded by the Sun Thermometer	164 hours = 44 per cent.
Number of clear days	7
Number of fair days	12
Number of cloudy days	12

Bright Sunshine.

Number hours recorded, 207, = 56 per cent.

Rain, 2d, 3d, 5th. 6th, 7th, 8th, 9th, 12th, 13th, 15th, 16th, 19th, 20th, 24th, 25th, 26th, 28th, 31st.

Thunder and Lightning. 8th, 19th, 28th.

Gales. 35m. 9th, S.S.W.; 39m, 18th, W.N.W.; 39m. 21st, W.N.W.; 36m. 22d, N.; 42m. 25th, S.; 50m. 29th, N.; 41m. 31st, S.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean, Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30 12	29.90	30.002	45.0	1 P	34 0	7 A	39 7	39.0	33.5	6.1
2	30.18	30 02	30.100	50.0	2 P	30.0	5 A	40 0	40.3	36.5	7.7
3	30.03	29.89	29 940	47 5	4:30 P	37.0	12 P	42.3	41.8	37.5	3.5
4	30 30	30.03	30.186	37.0	0 A	18 0	12 P	27.5	28 2	22.3	9 7
5	30.33	30.11	30.286	33.0	12 P	16.0	6 A	24.5	27.0	24.0	2.8
6	30.11	29.85	29.895	53.0	4 P	33 0	0 A	43 0	44.6	39 7	3 8
7	30.36	29.92	30.145	47.0	0 A	34 0	12 P	40 5	39.0	37.0	0.0
8	30.40	30.11	30.230	40.0	8 P	34.0	7 A	37.0	35 9	35 3	0.0
9	30.11	29.68	29 821	63.0	2 P	37.0	4 A	50.0	50.9	51.3	4.2
10	30.40	29 83	30 278	49.0	4 P	32 0	7 A	40.5	39.0	32.5	10.8
11	30 46	30 27	30.370	56.5	2 P	25.5	7 A	41 0	41 2	34.3	10.2
12	30.27	29.93	30.110	54.5	4:30 P	32.0	7 A	43.3	44 8	40 3	8.0
13	30.27	29.84	30 085	59.0	1:30 P	34.0	12 P	46.5	47.0	39.5	10.5
14	30.33	30 20	30.282	49.0	3:30 P	28.0	5 A	38.5	39 2	32.5	5.3
15	30.20	29.97	30 058	62.0	3 P	39.0	4 A	50.5	48 1	42 5	7.0
16	29 97	29.74	29.808	54.5	3 P	36.0	12 P	45.3	47 2	42.0	4.5
17	30.09	29.76	29.948	54.0	3 P	34.0	7 A	44.0	43.6	37.7	8.3
18	30.45	29.76	30.174	40.0	4 P	23.5	12 P	31.7	34 1	28 0	11.3
19	30.53	30.27	30.419	43.0	2 P	16.0	6 A	29 5	31.6	26.3	9.8
20	30.26	30.00	30.050	75.5	2 P	40.0	0 A	57 7	59 4	54.7	8.0
21	30.15	29 85	29.971	79 5	11 A	43 0	12 P	61.3	61 3	51 3	5.6
22	30.60	30.15	30 475	48.5	4 P	32 0	12 P	40.3	40.2	33.0	9.7
23	30.65	30.43	30.566	52.0	4 P	26.0	7 A	39.0	37.7	32.0	11.0
24	30.45	30.02	30.301	52 0	12 P	32.0	7 A	42.0	41.6	38.0	4.5
25	30.11	29.86	29 956	70.0	2 P	46.0	12 P	58 0	58.5	53.5	9.0
26	30.25	29.88	30.193	55.0	4 P	39.0	6 A	47.0	47.0	45.0	1.8
27	30.33	30 12	30.252	64.0	4 P	49.0	0 A	56.5	54.6	51.0	5 1
28	30.12	29 64	29 977	77.0	3 P	35.0	12 P	56 0	55.1	46.0	5.8
29	30 47	30.05	30 334	35 0	5 P	21 0	6 A	28 0	28.5	22 0	11.6
30	30.58	30.31	30 459	48.0	4 P	17.0	7 A	32 5	32.3	30.0	11.5
31	30.31	29.75	30.013	57.0	3 P	33.0	2 A	45.0	45.5	45.5	0.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	26 0	.228	61.5	W.S.W.	131	1.0	14	2 A				
2	32.0	.250	74.0	S.S.W.	151	3.0	24	3 P	7 P	8 P	T	
3	33 0	.251	76.0	S.	94	1.5	17	1 A	8 A	10 A	.10	
4	14 5	.138	63.0	N.N.W.	348	5.5	33	1 P				
5	18.5	.149	69.5	S.S.W.	148	1.5	17	5 P	6 P	12 P	.20	
6	34.0	.291	69.0	S.S.W.	209	3.5	26	1 P	0 A	12 M	.10	
7	34.0	.238	83.5	N.	96	2.0	20	10 A	4 A	7 A	.08	
8	31.5	.224	80 5	N.E.	45	0.0	—	—	4 A	6 A	.08	
9	50.0	.399	89 0	S S.W.	229	6.0	35	5 P	2 A	12 P	.55	
10	25.5	.218	64.5	N.W.	287	5.0	32	10 A				
11	30 0	.226	74 5	S.S.W.	287	3 5	26	5 P				
12	37.5	.290	79.5	S.S.W.	222	1.5	17	11 P	10 P	12 P	.20	
13	34.0	.279	69.5	N W.	178	2.5	22	2 P	0 A	4 A	.28	
14	24.0	.227	58.0	N.	49	0.0	—	—				
15	38.5	.314	76 0	S.S.E.	103	0 0	—	—	3 A	5 A	.01	
16	38.5	.298	78 0	W.N.W.	244	4.0	28	11 P	4 A	7 A	.04	
17	31 0	.274	63 0	W.S W.	246	5 0	32	11 P				
18	19.5	.167	63 0	N.W.	370	7.5	39	4 P				
19	16 0	.180	57 5	S.S.W.	215	4 5	30	3 P	10 P	12 P	.07	
20	51.0	.532	74.0	S.S.W.	289	4.0	28	9 P	6 P	7 P	T	
21	47 0	.465	69.5	N.N.W.	359	7.5	39	4 P				
22	28.0	.215	69.5	N.N.W.	364	6.5	36	10 A				
23	26.0	.207	67 5	S.W.	123	2.0	20	10 P				
24	33.0	.266	72.0	S.S.W.	157	3.0	24	12 M	2 P	12 P	.40	
25	52.0	.442	88.5	S.W.	388	9.0	42	5 A	0 A	6 A	.41	
26	43.0	.326	85.5	N.	70	4.0	28	1 P	8 A	1 P	.28	
27	49 5	.407	87.5	S.E.	55	0.0	—	—				
28	43 5	.353	82.5	W.S.W.	280	5.5	33	3 P	5 P	9 P	.27	
29	13.0	.140	58.5	N.	364	12.5	50	2 A				
30	23.5	.164	66.0	S.S.W.	158	5.0	32	6 P				
31	43.5	.344	85.5	S.S.W.	227	8.5	41	5 P	9 A	12 P	.50	

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was abnormal in several respects and furnished some interesting records. The most noticeable features were the high temperature at the equinoctial period, when summer heat was registered, and the rapid fall in temperature on the 28th–29th, when a drop of 56 degrees occurred in fifteen hours.

The month, taken as a whole, was much more like April than March, and the season was fully three weeks in advance of normal conditions when the month closed. There was no snow during the month and most of the frost had left the ground soon after the month opened.

The mean barometer was abnormally high and the range of pressure quite small for the time of year. Changes in pressure were quite marked however, and the resulting wind movement was considerably more than the normal. The prevailing wind direction from the southwest quadrant was rather unusual for this station.

The mean hourly temperature was more than eight degrees higher than usual, making it the warmest March on our records. The temperature record for March, 1903, was, however, almost as high.

The maximum temperature was more than seventeen degrees higher than the average value for March, and was the highest since 1907. The minimum temperature was more than ten degrees above the normal for this feature. On the 28th the temperature fell 35 degrees in five hours.

The mean dew-point was nearly seven degrees higher than usual and the relative humidity was below the normal.

The total precipitation was about five-sixths of the normal and was well distributed throughout the month.

The amount of sunshine was comparatively large.

J. E. OSTRANDER, Meteorologist.

H. W. POOLE, Observer.

BULLETIN No. 388. APRIL, 1921

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.26, 7th, 12 M
Minimum reduced to freezing,	29.22, 30th, 10 P
Reduced maximum reading	30.56, 7th, 12M
Reduced minimum reading,	29.51, 30th, 10 P
Mean semi-daily reduced	30.055
Monthly range	1.05

***Air Temperature.** In Degrees Fahr.

Highest	85.0, 6th, 4 P
Lowest	25.5, 2d, 7 A
Mean hourly	51.5
Mean of means of max. and min.	52.0
Mean sensible (wet bulb)	46.4
Monthly range	59.5
Highest mean daily	64.6, 5 th
Lowest mean daily	36.5, 11th
Mean maximum	63.8
Mean minimum	40.2
Mean daily range	23.6
Greatest daily range	44.0, 6th
Least daily range	6.0, 15th

Humidity.

Mean dew point	43.2
Mean force of vapor	.384
Mean relative humidity	76.9

Precipitation. In inches.

Total precipitation, in inches	6.47
Total snow, in inches	1.0
Number of days on which .01 inch or more rain fell	13

*Temperature in ground shelter.

**Reduced to freezing and sea-level.

Wind.

Total movement	4867 m
Greatest daily movement	320m, 12th
Least daily movement	43m 8th
Mean daily movement	162m
Mean hourly velocity	6.7 m

Maximum pressure per square foot, 6.5 lbs = 36m per hour, 3d, 1 A, W.; 15th, 10 A, S

Maximum velocity for 5 minutes, 24m per hour, 15th, 10 A, S.

Prevailing direction, North Northeast.

Summary.

North	17 per cent
North Northeast	10 " "
East	13 " "
East Southeast	10 " "
South Southwest	20 " "
Southwest	10 " "
Other directions	20 " "

Weather.

Mean cloudiness observed . . . . 62 per cent

Total cloudiness recorded by the Sun Thermometer . . 187 hours = 46 per cent.

Number of clear days	5
Number of fair days	16
Number of cloudy days	9

Bright Sunshine.

Number hours recorded, 215, = 53 per cent.

Rain, 1st, 7th. 8th, 9th, 15th, 16th, 17th, 18th, 19th, 21st, 22d, 23d, 24th, 29th, 30th.

Snow, 18th.

Hail, 18th.

Frosts after the 15th, none.

Gales, 36m. 3d, W.; 36m, 15th, S.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean, Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.17	29 81	30.028	50.0	4 P	32 0	12 P	41 0	41.5	36.7	8.8
2	30.21	29.95	30.079	59.0	3 P	25.5	7 A	42.3	42.0	34 7	11.5
3	30.35	29.96	30.233	65.0	3 P	39.0	6 A	52.0	52.8	45.7	11.8
4	30.41	30 23	30.325	71.0	3:30 P	36.0	7 A	53.5	53 8	44.5	9 5
5	30.33	30 21	30.282	82.5	3:30 P	46.0	7 A	64.3	64.6	55.0	10.8
6	30.43	30.14	30.252	85.0	4 P	41 0	7 A	63 0	61 4	52.3	11.2
7	30.56	30.43	30.528	46.0	0 A	38.0	7 A	42.0	41.2	36.7	0.0
8	30.45	29.88	30.100	55.5	12 P	38 0	6 A	46.7	41 8	43.2	1.7
9	29.91	29.67	29.770	72.0	1 P	46.0	12 P	59.0	57.2	51.0	4.5
10	30.16	29.91	30 045	51.5	1 P	32.0	12 P	41.7	42.5	38.7	6.5
11	30 15	30.04	30.102	46 5	4 P	30.0	4 A	38.3	36 5	32.7	4.3
12	30.11	29.96	30.039	61.0	6 P	29.0	7 A	45.0	46.0	39.7	11.7
13	30.10	29.97	30 035	68.0	4:30 P	36.5	5 A	52.3	52.3	46.0	8.6
14	30.19	30.10	30.155	75.0	2 P	44 5	6 A	59 7	58.8	50.5	8.8
15	30.17	30.03	30.096	59 0	6 P	53 0	3 A	56.0	56.3	54.3	0.0
16	30.07	29 80	29.954	70 5	4 P	56.0	12 P	63.3	60.5	56.0	6.8
17	29.82	29.71	29.763	58.0	0 A	40.0	12 P	49.0	46.8	42.3	0.0
18	29.92	29.86	29.905	40.0	0 A	33.5	12 P	36.7	36.7	33.3	0.0
19	29.92	29.85	29.869	50.0	7 P	32.0	2 A	41.0	41.0	39.0	6.5
20	29.97	29 85	29.908	69.5	3 P	30.5	7 A	50.0	52.4	46.7	10.9
21	30.01	29.88	29.949	76.0	3 P	49.0	7 A	62.5	62.0	52.5	8.1
22	30.17	29.93	30.078	72.0	2:30 P	46.0	12 P	59.0	56.9	48.5	6.0
23	30.13	29.77	29.899	50.5	1 A	40.0	12 P	45.3	45.2	42.3	0.0
24	30.08	29 79	29.937	63.0	4 P	39.0	6 A	51.0	49.9	45.3	7.8
25	30.16	30.08	30.109	76.0	4 P	35.0	7 A	55.5	56.4	52.0	13.1
26	30 23	30.16	30 227	75.5	4 P	41.5	6 A	58.5	57.5	53.0	13.0
27	30.20	30.13	30.163	66.0	5 P	44.5	5 A	55.3	56.6	54 5	9.1
28	30.15	30.05	30.105	74.0	4 P	55.0	2 A	64.5	64 5	58.0	11.1
29	30.05	29 84	29 928	68.0	2 P	48.0	6 A	58 0	59.5	56.5	10.0
30	29.83	29.51	29.787	58.0	3 P	50.0	12 P	54.0	53 4	51.0	2.6

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft.	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	33 0	.240	77.5	N.	294	3 5	26	8 A	0 A	3 A	.24	
2	28.5	.244	68.0	S.S.W.	193	5.0	32	5 P				
3	42.0	.369	73.0	W.N.W.	283	6.5	36	1 A				
4	37.0	.396	59.5	S.W.	97	1.5	17	4 P				
5	50.5	.553	67.0	S.W.	148	1.5	17	9 P				
6	48.0	.507	69.5	S.S.W.	104	3.0	24	10 P				
7	33.5	.235	81.5	E.S.E.	166	1.5	17	6 A	7 P	12 P	.02	
8	41.5	.309	88 0	E.	43	0.0	—	—	0 A	12 P	.42	
9	48.5	.422	81.5	W.N.W.	206	4.0	28	2 P	0 A	2 P	.32	
10	35.5	.266	78 5	N.	181	1.5	17	11 P				
11	28.5	.207	75.0	N.	312	5.0	32	10 A				
12	32.0	.299	64.5	N.W.	320	1.5	17	2 P				
13	42.0	.387	71.0	S.S.W.	72	0.0	—	—				
14	47.0	.452	74.0	S.S.W.	161	4.0	28	3 P				
15	53 0	.455	87.0	S.S.W.	280	6.5	36	10 A	6 A	12 P	.57	
16	54.5	.498	86.0	S.S.W.	152	2.5	22	7 P	0 A	12 P	.84	
17	39.5	.295	83 5	N.	187	2 0	20	12 M	0 A	12 P	.64	
18	29.5	.207	79.5	N.N.E.	158	1.5	17	7 A	0 A	12 P	.38	1
19	41.5	.346	78.5	N.N.E.	95	2 5	22	11 A	0 A	3 P	.03	
20	42.0	.409	70.5	W.S W.	118	2.5	22	5 P				
21	48 5	.478	71 5	S.W.	104	3.5	26	6 P	8 A	5 P	T	
22	50.5	.377	83 5	E.	130	1 5	17	4 P	8 A		T	
23	40.0	.289	83.5	N.N.E.	155	5.5	33	4 P	8 A	12 P	.30	
24	41.0	.347	75.5	N.N.W.	264	2.5	22	5 P	0 A	9 A	.46	
25	47.5	.478	69.0	N.	112	1.5	17	11 A				
26	50.5	.470	80.0	E.S.E.	82	1 0	14	6 P				
27	52.0	.489	80.5	E.	104	0.5	10	1 P				
28	54.5	.579	74.5	E.	132	0.5	10	5 P				
29	54.5	.521	83.5	E.S.E.	122	1.0	14	5 P	5 P	12 P	.15	
30	49.5	.397	90.5	NE.	92	1.0	14	11 P	0 A	12 P	2.10	

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The forwardness of the season, so pronounced at the beginning of the month, was fairly well maintained throughout the month. A high mean temperature with ample moisture contributed to the seasonal advancement so that the month closed with the season from two to three weeks ahead of normal. The month proved to be the warmest since this station was established in 1889. Going father back in the records for temperature at Amherst it is found that the month was the warmest April since 1878, when the mean temperature was 52.2 degrees.

The precipitation was more than twice the normal amount and was larger than any April on our records, excepting only that of 1914. The highest temperature was reached early in the month and no frosts were noted after the middle of the month although there was a considerable fall of snow on the 18th.

The mean barometer was considerably above the normal and the range was nearly equal to the average value for this feature.

The mean hourly temperature was more than five degrees above the normal and the maximum and minimum were both exceptionally high records.

On the 6th, the date of the maximum temperature, the range was 44° which is nearly as large as is sometimes noted for a whole month.

The mean dew point was more than 8° higher than usual and the relative humidity about 9 per cent more than the normal.

The precipitation record referred to above was greatly augmented by the downpour which occurred on the last day of the month and was still in progress when the month closed.

The total wind movement was considerably less than the normal and the prevailing direction of north northeast a very unusual record for this station.

The amount of sunshine was nearly normal.

J. E. OSTRANDER, Meteorologist.

H. W. POOLE, Observer.

BULLETIN No. 389. MAY, 1921

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.12, 20th, 7 A
Minimum reduced to freezing,	29.41, 9th, 11 A
Reduced maximum reading	30.42, 20th, 7 A
Reduced minimum reading,	29.70, 9th, 11 A
Mean semi-daily reduced	30.010
Monthly range	0.72

***Air Temperature.** In Degrees Fahr.

Highest	89.0, 21st, 3:30 P
	22d, 3 P.
Lowest	33.0, 12th, 5 A
Mean hourly	58.9
Mean of means of max. and min.	59.0
Mean sensible (wet bulb)	52.2
Monthly range	56.0
Highest mean daily	76.2, 22d
Lowest mean daily	46.1, 25th
Mean maximum	71.0
Mean minimum	47.0
Mean daily range	24.0
Greatest daily range	37.0, 8th, 21st
Least daily range	5.0, 5th

Humidity.

Mean dew point	50.2
Mean force of vapor	.507
Mean relative humidity	75.2

Precipitation. In inches.

Total precipitation, in inches	4 56
Number of days on which .01 inch or more rain fell	9

*Temperature in ground shelter.

**Reduced to freezing and sea-level.

Wind.

Total movement	4400 m
Greatest daily movement	286m, 5th
Least daily movement	62m 27th
Mean daily movement	142m
Mean hourly velocity	5.9 m

Maximum pressure per square foot, 6.5 lbs= 36m per hour, 9th, 3 P, N.W.

Maximum velocity for 5 minutes, 24m per hour, 9th, 3 P, N.W.

Prevailing direction, Southwest.

Summary.

West	13 per cent
Northeast	10 " "
South	19 " "
South Southwest	10 " "
Other directions	48 " "

Weather.

Mean cloudiness observed	36 per cent
Total cloudiness recorded by the Sun Thermometer	148 hours = 33 per cent.
Number of clear days	16
Number of fair days	10
Number of cloudy days	5

Bright Sunshine.

Number hours recorded, 305, = 67 per cent.

Rain, 1st, 5th. 6th, 13th, 14th, 15th, 16th, 22d, 23d, 25th, 29th.

Thunder and Lightning, 22d, 29th.

Frosts. 12th.

Gales, 36m. 9th., N.W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	29.87	29.77	29 853	56.5	5 P	41 0	7 A	48 7	48.5	44.3	7.3
2	29 90	29.82	29.874	67.0	3 P	38.0	6 A	52.5	53 4	47.0	11.0
3	29 95	29.89	29.927	70.0	4 P	41.0	6 A	55.5	56.1	51.0	11.1
4	29.98	29.89	29.942	65.0	1 P	48 0	12 P	56.5	56 5	50.5	11.0
5	30.02	29.94	30 001	49.5	5 P	44 5	7:30 A	47 0	47.5	44 3	0.0
6	29 99	29.81	29 862	60.0	3 P	47.0	12 P	53.5	51.9	46 5	7.0
7	29.81	29.72	29 772	68.0	3 P	41.0	5 A	54.5	54 2	50.0	11.7
8	29 95	29.76	29.859	77.0	4 P	40.0	5:30 A	58.5	58.2	53.5	10.9
9	29.85	29 70	29.744	69.5	5 P	47.0	5 A	58.3	59.5	54 5	10.0
10	30.12	29.85	29.936	65.0	4 P	41.5	7 A	53.3	55.0	48.5	12.8
11	30.34	30.12	30.269	64.0	4 P	42.5	12 P	53.3	52.1	46.5	12.5
12	30.41	30.29	30.359	68.0	3 P	33 0	5 A	50.5	52.0	46.5	12.0
13	30.29	30.00	30.067	63.0	5 P	52 0	7 A	57.5	57.4	56.7	5.8
14	30.00	29.93	29.982	75.0	5 P	55 0	5 A	65.0	60.6	57.7	4.6
15	30.08	29.98	30.025	74.0	3 P	55.5	6 A	64.7	64.9	59.0	11.7
16	30.10	29.98	30 099	67.0	1:30 P	46.5	12 P	56 7	57.2	49.5	10.0
17	30.19	30.07	30.139	71.0	4 P	42.5	3:30 A	56.7	56 8	50.7	13.0
18	30.21	30.09	30.108	73 5	4 P	46.5	5 A	60.0	59.7	53.5	11.0
19	30.37	30 21	30 337	73.0	4 P	49 0	5 A	61 0	60.3	51.0	12.5
20	30.42	30.22	30.317	77.0	3 P	44.0	5 A	60 5	62.0	55.7	12.7
21	30 26	30.04	30.159	89.0	3:30 P	52.0	5 A	70.5	71 8	64.0	12.8
22	30.04	29 75	29 799	89.0	3 P	63.0	5 A	76 0	76.2	67.0	11.8
23	30.31	29 79	30 008	73.0	0 A	48.0	12 P	60.5	58.0	55 0	4.1
24	30.40	30.19	30 313	64.5	4 P	41.0	4:30 A	52.7	52 9	49.7	12.0
25	30.19	29 77	29.909	49.5	6 P	42 5	3 A	46.0	46.1	45.5	0.0
26	29.96	29 76	29.842	79.0	5 P	44.5	0 A	61.7	61.7	56 3	11.8
27	30.05	29.96	30 031	84.5	4 P	48.0	5 A	66 3	65 5	61.0	13.0
28	30.05	29 87	29.963	82.0	4 P	51.0	5 A	66.5	67.0	62.5	11.6
29	29.91	29 80	29.850	70.0	9:30 A	61.5	12 P	65.7	65.0	63.3	2.7
30	29 99	29.90	29.968	81.5	4:30 P	59.0	5 A	70.3	69.1	63.7	13.3
31	30.01	29.89	29.996	86.0	3 P	52.0	5 A	69.0	69.3	61.0	13.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	42 5	.317	88 0	N.E.	260	5.0	32	2 P	0 A	10 A	.56	
2	44.0	.416	70 0	S.S.E.	121	1.0	14	11 P				
3	44.5	.424	70.5	N.N.W.	125	1.5	17	10 A				
4	45.5	.451	68.0	E.	224	4.0	28	4 P				
5	42.0	.308	85.5	E N.E.	286	3.0	24	10 A	6 A	8 A	.05	
6	42.5	.367	74 0	N.E.	196	3 0	24	10 A	8 A	3 P	T	
7	46.0	.428	73 0	E.	82	1.0	14	2 P				
8	49.5	.501	70.0	N.N.E.	108	3.0	24	2 P				
9	49.5	.522	68.0	W.N.W.	208	6.5	36	3 P				
10	45.5	.403	75 5	N.	167	4.5	30	2 P				
11	43.5	.358	80.0	W.	110	0.5	10	1 P				
12	42.5	.373	74.0	S.S.W.	127	1.5	17	5 P				
13	56 0	.484	93.0	S.	120	1.0	14	10 P	7 A	12 P	.83	
14	56.0	.526	85.5	S.S.W.	133	1.0	14	12 M	0 A	11 A	.13	
15	54.5	.629	68 0	S.S.W.	130	2.0	20	2 P	11 P	12 P	.02	
16	45.5	.416	73.0	N.W.	154	2.5	22	3 A	0 A	5 A	.08	
17	45 0	.428	65.0	W.	130	1.5	17	9 A				
18	50.5	.489	75.5	W.	124	1.5	17	4 P				
19	43 5	.516	57.0	S.E.	109	0.5	10	9 P				
20	50.5	.569	65.5	S.	162	3.0	24	3 P				
21	59.5	.793	66.0	S.W.	115	1.0	14	4 P				
22	63 0	.876	66.0	W.N.W.	247	5.0	32	3 P	7 P	8 P	T	
23	53.0	.475	88.0	E.N.E.	148	1.5	17	9 A	4 A	1 P	.51	
24	47.5	.408	82.5	S.	74	1 0	14	6 P				
25	44 5	.315	93.0	S.	133	1.0	14	11 A	8 A	5 P	.30	
26	48 5	.557	70.5	N.	166	1.5	17	9 A				
27	58.5	.626	79 5	W.	62	0.0	—	—				
28	60.5	.683	83.0	S.	83	0.5	10	2 P				
29	61.5	.636	86.0	N.E.	84	0.5	10	12 M	10 A	6 P	2.08	
30	60.5	.724	73.0	N W.	103	0.0	—	—				
31	59.5	.690	73.5	S.	109	1.5	17	8P				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was generally seasonable and the general advance of the season, so marked during April, was somewhat checked. Only one frost was recorded and that was before the middle of the month. The amount of sunshine was large and there were but few cloudy days. The coldest day was late in the month. An unusually heavy downpour of rain occurred on the 29th, and for nearly two hours the streets were flooded and the roads were washed out. At the close of the month the season was about ten days ahead of the normal.

A comparison of the records with the normals for this station shows the following features of interest: The mean barometer was higher than usual and the range less than normal. Notwithstanding the comparatively steady barometer the wind movement was nearly twenty per cent more than usual. The wind was more variable in direction than usual.

The mean temperature was slightly higher than the normal and the range was about the usual amount.

The mean dew-point and relative humidity were both relatively high.

The total precipitation was about twenty per cent more than the normal, due to the heavy shower, referred to above, near the close of the month. The ground has had an excess of moisture during the whole spring season.

Although the wind movement was large there was but one moderate gale recorded.

J. E. OSTRANDER, Meteorologist.

H. W. POOLE, Observer.

BULLETIN No. 390. JUNE, 1921

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	29.98, 5th, 8 A
Minimum reduced to freezing,	29.24, 13th, 4 P
Reduced maximum reading	30.27, 5th, 8 A
Reduced minimum reading,	29.52, 13th, 4 P
Mean semi-daily reduced	29.942
Monthly range	0.75

Air Temperature. In Degrees Fahr.

Highest	96.0, 22d, 3 P
Lowest	40.5, 16th, 5 A
Mean hourly	66.9
Mean of means of max. and min.	66.4
Mean sensible (wet bulb)	60.1
Monthly range	55.5
Highest mean daily	77.5, 22d
Lowest mean daily	59.7, 5th
Mean maximum	79.5
Mean minimum	53.3
Mean daily range	26.2
Greatest daily range	40.0, 22d
Least daily range	8.5, 28th, 30th

Humidity.

Mean dew point	55.8
Mean force of vapor	.655
Mean relative humidity	70.9

Precipitation. In inches.

Total precipitation, in inches	3.87
Number of days on which .01 inch or more rain fell	10

*Temperature in ground shelter.

**Reduced to freezing and sea-level.

Wind.

Total movement	3832 m
Greatest daily movement	255m, 14th
Least daily movement	35m 17th
Mean daily movement	128m
Mean hourly velocity	5.3 m

Maximum pressure per square foot, 7.5 lbs= 39m per hour, 15th, 3 P, N.W.

Maximum velocity for 5 minutes, 24m per hour, 15th, 3 P, N.W.

Prevailing direction, West.

Summary.

North Northeast	27 per cent
South Southwest	30 " "
West	10 " "
Other directions	33 " "

Weather.

Mean cloudiness observed	43 per cent
Total cloudiness recorded by the Sun Thermometer	141 hours = 31 per cent.
Number of clear days	14
Number of fair days	13
Number of cloudy days	3

Bright Sunshine.

Number hours recorded, 316, = 69per cent.

Rain, 3d. 6th, 9th, 11th, 13th, 17th, 18th, 23d, 26th, 27th, 28th, 29th, 30th.

Thunder and Lightning, 23d, 26th, 27th, 29th.

Gales, 39m. 15th., N.W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.22	29.88	30.059	72.0	4 P	51.0	12 P	61.5	63.5	54 0	11.8
2	30 26	30.14	30.197	75.0	4 P	42.0	5 A	58.5	60.0	54.0	12.3
3	30 13	29.90	29.984	79.0	3 P	48.0	5 A	63.5	64.1	57.7	12.7
4	30.22	29.90	30.026	71.5	4 P	50 0	12 P	60 7	63.8	58.7	12.8
5	30.27	30.17	30.240	75.0	4 P	44 0	5:30 A	59 5	59 7	51.7	12.1
6	30.25	30.14	30.208	75.0	3 P	44.0	5:30 A	59.5	61.5	58 3	11.6
7	30.18	30.04	30.108	78.5	4:30 P	46.0	5 A	62.3	64 0	58.7	13 6
8	30.15	30.04	30.088	83.5	5 P	53.0	6 A	68.3	68.1	61.5	12.2
9	30.21	30.13	30.170	80.0	4 P	56.0	4 A	68.0	67.3	63 5	9.2
10	30.17	30.04	30.110	81.0	12:30 P	58.0	4 A	69.5	68.5	62.7	9.2
11	30.05	29 73	29.857	84.0	3 P	62.0	4 A	73.0	70.3	64.3	6.8
12	29.88	29 69	29.760	80.0	2:30 P	61.0	12 P	70.5	71.6	62.3	12 1
13	29 88	29.52	29 664	82.5	3:30 P	49.5	4:30 A	66.0	65.1	56.5	7.9
14	29.83	29.61	29.734	67.0	4:30 P	53 0	12 P	60.0	60.8	51.0	13.0
15	29.87	29.72	29.842	76.0	2:30 P	46.5	5 A	61.3	61.7	51.0	14.0
16	29.93	29.82	29 880	79 0	5 P	40.5	5 A	59 7	61.7	51.3	13.9
17	29.93	29.79	29.866	77.0	5 P	47 5	2 A	62.3	60 1	55.7	7.0
18	29 89	29.75	29 830	79 5	4:30 P	47.0	5 A	63 3	63.6	55.5	12.5
19	29 94	29 83	29 892	75.5	4 P	46 0	6 A	60 7	63.0	61.3	13.5
20	29.98	29.89	29.946	82 5	4 P	44.0	5:30 A	63.3	65.8	56 7	8 8
21	29.98	29.84	29.900	89.0	4:30 P	56.5	5 A	72.7	72.3	63.0	12.0
22	29.91	29 81	29 863	96.0	3 P	56.0	5 A	76.0	77.5	68.3	13.0
23	29 83	29 70	29.756	86 5	1 P	58.5	12 P	77.5	75 5	69 5	6.5
24	29.94	29.70	29 766	87.0	1 P	62.5	4:30 A	74.7	76.0	67.0	13.7
25	30.08	29 94	30.019	88.0	5:30 P	54.5	5 A	71.3	72 1	60.5	13.6
26	30.11	29 96	30 046	79.0	2 P	58.5	4:30 A	68.7	69 8	62.7	8.5
27	29 96	29.84	29 888	84.5	12:30 P	61.0	4:30 A	72 7	72.7	67.7	10.7
28	59.84	29 75	29.780	76.0	3 P	67 5	6 A	71.5	71.6	70.0	3.5
29	29.88	29 73	29.810	77.0	4 P	66.5	12 P	71.7	71.2	67.5	7.0
30	29 99	29 88	29.962	68.0	2 P	59.5	12 P	63 7	64.0	60.7	0.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.	Snow.
1	47 0	·573	57 0	N.N.E.	244	4.0	28	9 A				
2	50.0	·509	70 0	W.S.W.	108	1.5	17	6 P				
3	54.0	·567	75.0	S.S.W.	222	4.0	28	4 P	8 P	9 P	T	
4	54.5	.631	66.5	N N.E.	213	2.5	22	1 P				
5	46.5	.482	65.5	N.N.E.	145	2.0	20	12 M				
6	55.0	.558	78 0	N.N,F.	73	0.0	—	—	6 P	12 P	.02	
7	55.5	·594	76 0	W.	68	0.0	—	—				
8	58.5	.644	75.5	S.S.W.	87	0.0	—	—				
9	62.5	628	92.0	S.S.W.	102	1.0	14	9 P	3 P	4 P	T	
10	60.5	.641	84 5	S.S.W.	143	3.0	24	8 P				
11	61.5	.699	80.0	S.S.W.	229	4.5	30	3 P	3 A	12 P	.02	
12	57.5	·736	64.5	S S W.	233	2.5	22	12 M				
13	52 0	609	68.5	W.N.W.	140	4.5	28	7 P	6 A	6 P	.14	
14	43.0	·506	55 0	W.	255	4 5	30	7 A				
15	40.0	·572	43.5	N.W.	203	7 5	39	3 P				
16	41.0	·554	47 0	N W.	131	2.5	22	4 P				
17	53.0	·514	79.0	S S.W.	35	0.0	—	—	3 A	8 A	T	
18	51.5	·550	70.5	N.N.E.	108	3.0	24	8 P	7 P	8 P	.05	
19	57.0	.655	70.5	N.N.E.	143	2.0	20	3 P				
20	49.5	.644	57.6	N.N.W.	67	0.5	10	6 P				
21	58.0	.772	62.5	N.E.	120	0.5	10	5 A				
22	62 5	1 006	56.0	S.W.	52	1.5	17	6 P				
23	67.5	.819	83.0	S.W.	94	0.5	10	12 M	3 P	5 P	.05	
24	62.0	·930	59 5	E N E.	111	1.5	17	2 P				
25	53 5	·765	53.0	N.N.E.	70	0.0	—	—				
26	59 5	.668	76.5	S.S.W.	146	2.0	20	5 A	4 A	9 A	.14	
27	65.5	.781	82.0	S.W.	69	0.5	10	1 P	2 A	12 P	.30	
28	69 5	·763	94.0	S.S.W.	49	0.0	—	—	0 A	12 P	.10	
29	67.0	.720	90.5	S.	69	0.0	—	—	0 A	12 P	2.60	
30	60.0	·556	93.0	N.N.E.	100	0.5	10	7 P	0 A	12 P	.45	

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was generally fair and marked by a large amount of sunshine, only three days being recorded as cloudy. The heavy rain which occurred near the last of May was followed by a long dry period as practically no precipitation was noted this month until the last week. On the 29th an exceedingly heavy rainfall occurred which effectively broke the drought. The last week of the month was generally sultry and cloudy.

The records of the several elements show the following features of interest: The barometer records were generally normal and presented no features of especial interest. The total wind movement was slightly more than the normal and the large amount from the south southwest and north northeast was very noticeable. There was only a single gale recorded on the wind pressure chart.

The mean temperature was practically normal and the maximum temperature nearly five degrees higher than usual. The warmest part of the month was from the 20th to the 26th. The first third of the month was generally cool during the nights.

The mean dew point and relative humidity were both slightly lower than their normals.

The total precipitation was nearly twenty per cent more than the normal although there was scarcely any before the 26th. Nearly all of the heavy downpour on the 29th occured between 5 P. M. and 10 P. M.

The amount of sunshine was more than twenty per cent above the normal.

J. E. OSTRANDER, Meteorologist.

A. G. LINDSKOG, Observer.

BULLETIN No. 391. JULY, 1921

Meteorological Observations

AT THE

MASSACHUSETTS

AGRICULTURAL EXPERIMENT

STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	29.92, 24th, 8 A
Minimum reduced to freezing,	29.37, 31th, 2 P
Reduced maximum reading	30.21, 21th, 8 A
Reduced minimum reading,	29.63, 31th, 2 P
Mean semi-daily reduced	29.977
Monthly range	0.56

Air Temperature. In Degrees Fahr.

Highest	93.5, 3d, 4 P
Lowest	54.5, 23th, 5 A
Mean hourly	73.4
Mean of means of max. and min.	74.7
Mean sensible (wet bulb)	68.6
Monthly range	39.0
Highest mean daily	80.6. 8th
Lowest mean daily	61.8, 1st
Mean maximum	84.4
Mean minimum	64.9
Mean daily range	19.5
Greatest daily range	33.5 23d
Least daily range	6.5, 1st

Humidity.

Mean dew point	66.6
Mean force of vapor	.798
Mean relative humidity	83.6

Precipitation. In inches.

Total precipitation, in inches	6.00
Number of days on which .01 inch or more rain fell	11

•Temperature in ground shelter.

••Reduced to freezing and sea-level.

Wind.

Total movement	2421 m
Greatest daily movement	196m, 28th
Least daily movement	13m 4th
Mean daily movement	78m
Mean hourly velocity	3.3m

Maximum pressure per square foot, 4.5 lbs= 30m per hour, 14th, 4P, S.S.W., 19th 9P, S.SW.

Maximum velocity for 5 minutes, 16m per hour, 28th, 4 P, S.S.W.

Prevailing direction, South.

Summary.

South Southwest	32 per cent
South	23 " "
North Northeast	10 " "
Other directions	35 " "

Weather.

Mean cloudiness observed	66 per cent
Total cloudiness recorded by the Sun Thermometer	177 hours = 38 per cent.
Number of clear days	5
Number of fair days	24
Number of cloudy days	2

Bright Sunshine.

Number hours recorded, 285, = 62per cent.

Rain, 1st. 2d, 9th, 10th. 14th, 15th, 19th, 20th, 21th, 28th, 29th, 30th, 31st.

Thunder and Lightning, 5th, 8th, 9th, 15th, 19th, 20th, 28th, 29th, 30th. 31st.

Gales. None

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	27.97	29.86	29 904	64.5	4:30 P	58 0	3 A	61.3	61.8	60.7	0.0
2	29 84	29.81	29 836	80.5	5 P	61.0	4 A	70.7	69 3	66.7	8.0
3	29 92	29.84	29.898	93.5	4 P	65.0	7 A	79.3	77.0	72.0	11.1
4	30.07	29.91	29.924	92.0	4 P	67 0	6 A	79 5	79 3	71.5	12.5
5	30.19	30.07	30.158	77.5	4 P	66 5	6 A	72 0	70 0	63.5	10.3
6	30.17	30.02	30.095	79.5	4:30 P	57.5	5 A	68.5	69 4	64 0	10.6
7	30 10	29.96	30.033	86.5	3:30 P	67.5	5:30 A	77.0	76 4	72.0	8.0
8	29 98	29.85	29.916	93.0	2:30 P	74.0	3 A	83.5	80.6	77.0	8.0
9	29.98	29 84	29.926	85 5	3 P	70.5	5:30 A	78.0	74.5	70.3	6.3
10	30.07	29.97	30.026	79.0	2:30 P	69 0	6 A	74.0	73.4	71.0	6.0
11	30.12	30 05	30.100	80 0	3 P	67.5	4:30 A	73.7	74.6	70.5	6.5
12	30.13	30.05	30.098	80.5	4 P	70 5	4 A	75.5	74.1	70.5	10.2
13	30 05	29.91	29.990	88.0	4 P	70.0	5 A	79.0	77.0	72.3	9.7
14	29.94	29.76	29.853	88 0	1:30 P	71.5	4 A	79.7	78.2	73.5	8.0
15	29.93	29.76	29.842	78.0	11 A	64.0	12 P	71.0	71.3	70.0	2.5
16	30 06	29.95	30.034	83 5	3:30 P	59.5	5 A	71.5	70.7	66.0	12.4
17	30.13	30.05	30.110	87.0	4:30 P	58 0	6 A	72.5	70 8	64.3	11.3
18	30.12	29.96	30.047	83 0	3:30 P	63.0	4 A	73 0	72.8	66.5	10.0
19	29 97	29 70	29.810	83.5	1 P	67 5	12 P	75.5	73.8	71.5	8.0
20	29.81	29.66	29 741	86.5	2 P	66.0	5:30 A	76.3	73.8	68.5	10.1
21	30.12	29.81	30.026	78.0	5 P	62.5	12 P	70.3	69 2	63.0	8.7
22	30.20	30 12	30.168	82.0	4:30 P	55.5	5 A	68.7	68.8	61.5	11.5
23	30 18	30 12	30.146	88 0	4:30 P	54.5	5 A	71.3	71.2	63 7	13.0
24	30.21	30.18	30.194	87.5	1 P	60.0	5:30 A	73.7	73.3	65 7	11.0
25	30.20	30.08	30.151	92.0	2:30 P	65.0	5:30 A	78.5	77.6	70.5	12.1
26	30.11	30 06	30.082	89.5	1:30 P	67.5	5 A	78.5	76.1	72 0	10.5
27	20.12	29.92	30.022	92.5	3 P	65.0	5:30 A	78 7	79 0	73.7	12.7
28	29.92	29 76	29.835	91.5	2:30 P	72 5	12 P	82.0	79.1	73.0	9.2
29	29.84	29 77	29 805	81.5	12 M	67.0	12 P	74.3	72.3	68.7	7.0
30	29 88	29 76	29.761	82.0	5 P	65.0	6 A	74 0	72.8	69 5	11.5
31	29 83	29.65	29.743	83.0	2 P	63.0	12 P	73.0	68.3	61.7	8 3

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.*	Snow.
1	59 5	.558	92.0	N.N.E.	98	0.0	—	—	0 A	12 P	.74	
2	65.5	.698	91.5	S.W.	62	0.0	—	—	0 A	10 P	.92	
3	70.0	.892	84.5	N.N.E.	33	0.0	—	—				
4	68.5	.948	75.5	N.N.E.	13	0.5	10	9 P				
5	60.5	.690	77.5	S.E.	66	0.0	—	—				
6	61.5	.692	79.0	S.	104	0.0	—	—				
7	71.0	.847	90 5	S.	44	0.0	—	—				
8	76.5	.994	91.5	S.S.W.	40	0.0	—	—				
9	69.0	.794	91.0	S.	70	0.5	10	2 P	1 A	7 P	.55	
10	70.5	.803	93 0	S.W.	45	0.0	—	—	6 A	12 P	.17	
11	68.0	.852	82.0	S.E.	33	0.0	—	—				
12	69.0	.824	86.0	S.S.E.	45	0 0	—	—				
13	70 5	.875	87.0	S S.W.	86	0.5	10	12 M				
14	72.0	.900	88 0	S.S.W.	181	4.5	30	4 P	2 P	3 P	T	
15	69.0	.782	92.0	W.	121	1.0	14	1 A	4 A	4 P	.11	
16	62.0	.809	69.0	N	73	0 0	—	—				
17	62.0	.687	83.5	W S.W.	34	0.0	—	—				
18	64 0	.768	77.5	S.S.W.	143	2.0	20	11 P				
19	70 0	.842	87.5	S.S.W.	188	4.5	30	9 P	7 P	12 P	.97	
20	66.0	.808	80.5	N.	73	1.0	14	5 P	0 A	12 P	.36	
21	60.5	.662	80.0	N.E.	105	0.5	10	1 P	0 A	10 A	.36	
22	58 5	.632	81.0	E.S.E.	49	0.0	—	—				
23	61.0	.716	77.5	S S.W.	26	0.0	—	—				
24	62.5	.758	76.0	S S W.	59	1.0	14	5 P				
25	67.5	.910	75.5	S.S.W.	84	0.5	10	4 P				
26	71 0	.870	86.5	S S.W.	84	0 0	—	—				
27	72.0	.959	83.0	S.S.W.	92	0.5	10	5 P				
28	71.5	.958	81.0	S.	196	4.0	28	5 A	4 P	5 P	.07	
29	63.5	.731	94.5	S.	56	0.0	—	—	0 A	10 P	.63	
30	68.0	.826	82.0	S.	35	0.0	—	—	1 P	2 P	T	
31	58.5	.652	77.0	S.	83	3 5	26	3 P	2 P	4 P	1.13	

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was more like the dog days of August than the typical weather of July. Extreme sultriness, high humidity, small wind movement, and many thunder storms were all in evidence. The total precipitation was large and more of it occurred as local showers. The storm on the afternoon of the 31st was very heavy aud the lightning the most severe of the season. Notwithstanding the numerous thunder storms there were no gales recorded. The persistancy of the wind from the South and South Southwest undoubtedly had much to do with the abnormal weather which prevailed.

A comparison of the records of the several weather elements with their respective normals shows the following features: The mean barometer was practically normal and the range of pressure very small. The total wind movement was only about two-thirds of the normal and only seven days had a record of more than one hundred miles. On more than one-half the days the wind pressure recorded was negligable.

The mean hourly temperature was nearly three degrees higher than the normal, making it one of hotest Julys on our record.

The maximum temperature was practically normal and the minimum nearly ten degrees higher than usual.

The mean dew point was more than five degrees higher than the normal and the relative humidity more than ten points higher than its average value.

The total precipitation was nearly forty per cent more than usual and was well distributed throughout the month. More than one-half an inch was recorded on six different dates.

While the amount of sunshine was slightly more than the normal the mornings were generally cloudy. About four-fifths of the days were fair.

J. E. OSTRANDER, Meteorologist.

G. E. LINDSKOG, Observer.

BULLETIN No. 392. AUGUST, 1921

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing	30.06, 26th, 8 A
Minimum reduced to freezing	29.33, 18th, 1 P
Reduced maximum reading	30.35, 26th, 8 A
Reduced minimum reading	29.61, 18th, 1 P
Mean semi-daily reduced	30.067
Monthly range	0.74

Air Temperature. In Degrees Fahr.

Highest	91.0, 30th, 4 P
Lowest	45.0, 23d, 6 A
Mean hourly	66.9
Mean of means of max. and min.	67.2
Mean sensible (wet bulb)	61.2
Monthly range	46.0
Highest mean daily	78.2. 30th
Lowest mean daily	59.5, 22d
Mean maximum	79.2
Mean minimum	55.1
Mean daily range	24.2
Greatest daily range	35.5 10th
Least daily range	9.0, 2d

Humidity.

Mean dew point	57.9
Mean force of vapor	.638
Mean relative humidity	77.8

Precipitation. In inches.

Total precipitation, in inches	2.35
Number of days on which .01 inch or more rain fell	9

Wind.

Total movement	3709 m
Greatest daily movement	224m, 1st, 7th
Least daily movement	39m, 23d
Mean daily movement	120m
Mean hourly velocity	5.0m

Maximum pressure per square foot, 5.0 lbs= 32m per hour, 1st, 10 A, N.W., also 15th, 12 M, N.N.W.

Maximum velocity for 5 minutes, 20m per hour, 15th, 2 P, N.W.

Prevailing direction, Southwest.

Summary.

South Southwest	32 per cent
North Northeast	13 " "
Northwest	13 " "
Other directions	42 " "

Weather.

Mean cloudiness observed	40 per cent
Total cloudiness recorded by the Sun Thermometer	112 hours = 26 per cent.
Number of clear days	17
Number of fair days	11
Number of cloudy days	3

Bright Sunshine.

Number hours recorded, 317, = 74 per cent.

Rain, 2d, 6th, 7th. 8th, 12th, 13th, 14th, 17th, 18th, 20th, 30th.

Thunder and Lightning, 7th, 14th, 17th, 18th, 30th.

Gales. None

*Temperature in ground shelter.

**Reduced to freezing and sea-level.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.05	29.83	29 968	72.5	3 P	53.0	5:30 A	62.7	63.2	53.7	13.0
2	30.05	29.98	30.018	65.0	1:30 P	56.0	5 A	60.5	60.5	59.3	0.0
3	30.08	30.00	30.044	77.5	6 P	57.0	2 A	67.3	65.1	56.7	11.4
4	30 18	30.08	30.140	82.0	5:30 P	52.5	2:30 A	67.3	66.4	58.7	13.2
5	30 29	30.15	30.224	83.0	2:30 P	49.5	5 A	66 3	66.5	59.0	12.7
6	30.19	30.00	30.084	76.0	3:30 P	53.5	5 A	64.7	66.8	65.7	8.3
7	30.00	29.79	29 871	77.5	3 P	67.0	3 A	72.3	70 8	68.3	3.5
8	30.04	29.73	29.886	77.0	2 P	56.0	12 P	66.5	68.9	60.5	11.4
9	30 15	30 04	30.120	77.0	4:30 P	51.5	5:30 A	64.3	64.1	58 5	13.1
10	30 22	30.12	30.187	85.0	2:30 P	49.5	5:30 A	67.3	67.8	63.3	12 7
11	30.20	29.96	30.100	85.0	3 P	60.5	2:30 A	72.7	72.5	66.7	8.5
12	30.08	29.97	30.012	85.0	3 P	67.0	12 P	76.0	74.0	67.5	8.5
13	30.14	30.01	30.089	81.5	2 P	60.0	5:30 A	70.7	69.6	66.0	9.5
14	30.01	29.74	29.810	76 0	1:30 P	58.0	12 P	67.0	68.4	65.0	5.2
15	30 08	29.91	30.016	74.0	2:30 P	48.0	5:30 A	61.0	62.3	53.5	13.0
16	30.07	29.97	30.026	79.0	3:30 P	51.5	5 A	65.3	66.0	58.7	12.7
17	30.03	29.83	29 960	77 5	2 P	50.5	5 A	64.0	66 1	61.3	9.1
18	29.83	29.61	29.680	81 5	12 M	65.5	12 P	73 5	72.2	68.0	8.0
19	29.98	29.81	29 950	82.5	4:30 P	59 0	5:30 A	70 7	69.8	62.7	12.7
20	29.98	29.82	29.900	85.0	2 P	54.0	6 A	69.5	70.3	67.5	9.4
21	30.16	29.93	30.126	75.0	4 P	54.0	12 P	64.5	65.3	56.0	12.6
22	30.17	30.13	30.168	72.5	4 P	47.0	6:30 A	59 7	59.5	55.0	12.0
23	30.24	30.17	30.214	78.0	5 P	45.0	6 A	61.5	59.7	53 5	11.5
24	30.27	30.20	30.248	77.0	1 P	48.0	6 A	62 5	61.6	55.0	11.0
25	30.34	30.24	30.318	77.5	3:30 P	48.5	6 A	63.0	64 1	60.5	12.2
26	30.35	30.24	30.310	77.0	2:30 P	47.0	6 A	62.0	62 5	57 0	11.7
27	30.34	30.23	30.300	79.5	4 P	46.0	5:30 A	62.7	62.6	55.3	12.0
28	30.29	30.20	30.251	76.5	3 P	57.0	1 A	66.7	65.0	61.3	10.4
29	30.21	30.01	30.106	88.5	3:30 P	60.5	6:30 A	74.5	72.0	66.0	9.6
30	30.01	29.84	29.929	91.0	4 P	67.0	6:30 A	79 0	78.2	70 0	9.5
31	30.10	29.89	30.014	84.5	1:30 P	67.5	11 P	76 0	73.5	66.0	8 0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	46.0	.569	54 5	N.W.	224	5.0	32	10 A				
2	57.5	.533	90.0	S.S.W.	62	0.0	—	—	3:30 P	5:30P	.01	
3	51.5	.579	66.5	N.N.E.	68	0.0	—	—				
4	54.0	.622	68.5	E.	72	0.5	10	2 P				
5	54.0	.640	68.5	W.N.W.	76	0.5	10	5 P				
6	64.5	.701	86.5	S.S.W.	166	2.0	20	10 P	11:30 P	12 P	T	
7	67.5	.738	90.5	S.S.W.	224	2.0	20	3 A	7:30 A	12 P	.66	
8	56.5	.632	74.0	N.N.W.	168	1.5	17	1 P	0 A	6:30 A	.77	
9	53.5	614	68.5	W.	115	1.5	17	12 M				
10	56.0	.645	72.0	S.	89	1.0	14	6 P				
11	64.0	.757	81.5	S.S W.	178	1.5	17	3 P				
12	65.0	.768	82.5	W.	166	1.0	14	0 A	3 A	10:30 A	.06	
13	64.0	.710	84.5	S S.W.	70	0.5	10	10 P	4 P	8 P	.17	
14	63.5	.689	85 5	W S.W.	128	1.5	17	7 P	0 A	5 P	.02	
15	47.5	.522	64 0	N.W.	209	5.0	32	12 M				
16	53.0	.636	64.5	W.S.W.	173	3.0	24	10 A				
17	58.0	.650	74.0	S.S W.	121	0.5	10	11 A	8:30 P	12 P	.20	
18	65.5	.782	81.0	S.S.W.	172	1.0	14	2 A	0 A	6 P	.45	
19	59.0	.701	73.5	N.W.	95	0.5	10	9 A				
20	65.0	.760	82.5	S S.W.	99	1 5	17	10 A	4 P	5 P	.01	
21	52.0	.551	71.5	N.N.E.	221	4.5	30	9 A				
22	53 0	475	86.0	N.N.E.	102	0.0	—	—				
23	51.0	456	83.5	N.W.	39	0.0	—	—				
24	52 0	.497	79 0	S.E.	43	0 0	—	—				
25	58 5	584	85.5	S E.	73	0.0	—	—				
26	54.5	.530	81.0	E.	64	0.0	—	—				
27	52.0	.520	77.0	S.	48	0.0	—	—				
28	59 5	592	87.0	S.S.W.	111	1.0	14	5 P				
29	64.5	.716	86.0	S.S.W.	88	0.5	10	3 P				
30	67.5	.882	78.0	S.W.	145	1.0	14	9 A	9 P	11 P	T	
31	64.5	.720	83.0	N N.E.	100	0.0	—	—				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during August was not nearly as sultry as that of July, and therefore more pleasant. Unusual features were generally wanting and normal conditions prevalent. The last decade of the month was generally clear and free from precipitation. No gales were recorded and on many days no pressure registered on the wind pressure chart.

A comparison of the records of the several weather elements with their respective normals shows the following features: The mean barometer was rather high and the range about the usual amount. About one-third of the wind was from the south-southwest.

The mean temperature was about a degree lower than usual, and the maximum was practically normal and came near the last of the month. The minimum was about three degrees higher than usual, giving a rather small range.

The mean dew point was about two degrees lower than usual and the relative humidity was practically normal.

The total precipitation was less than two-thirds of the normal and no storms of any severity occurred.

The total wind movement was about twenty per cent more than the normal, although there were no large daily movements.

The amount of bright sunshine was very large and but little cloudy weather was noted.

J. E. OSTRANDER, Meteorologist.

G. E. LINDSKOG, Observer.

BULLETIN No. 393. SEPTEMBER, 1921

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing, 30.04, 20th, 12 P	
Minimum reduced to freezing, 29.26, 30th, 3 P	
Reduced maximum reading	30.33, 20th, 12 P
Reduced minimum reading,	29.54, 30th, 3 P
Mean semi-daily reduced	30.026
Monthly range	0.79

Air Temperature. In Degrees Fahr.

Highest	92.0, 2d, 1:30 P
Lowest	36.0, 27d, 7 A
Mean hourly	65.6
Mean of means of max. and min.	66.6
Mean sensible (wet bulb)	59.4
Monthly range	56.0
Highest mean daily	76.6, 3d
Lowest mean daily	54.5, 27d
Mean maximum	79.1
Mean minimum	54.0
Mean daily range	25.1
Greatest daily range	39.0 9th
Least daily range	10.5, 12th

Humidity.

Mean dew point	56.4
Mean force of vapor	.597
Mean relative humidity	79.5

Precipitation. In inches.

Total precipitation, in inches	1.84
Number of days on which .01 inch or more rain fell	11

Wind.

Total movement	3568 m
Greatest daily movement	282m, 18th
Least daily movement	42m, 24th
Mean daily movement	119m
Mean hourly velocity	5.0m
Maximum pressure per square foot, 8.5 lbs = 41m per hour, 30th, 4 P, S.S.W.	
Maximum velocity for 5 minutes, 30m per hour, 30th, 4 P, S.S.W.	
Prevailing direction, South Southwest.	

Summary.

South Southwest	23 per cent
South	20 " "
Southwest	13 " "
Northwest	13 " "
Other directions	31 " "

Weather.

Mean cloudiness observed	39 per cent
Total cloudiness recorded by the Sun Thermometer	122 hours = 33 per cent.
Number of clear days	14
Number of fair days	10
Number of cloudy days	6

Bright Sunshine.

Number hours recorded, 251, = 67 per cent.

Rain. 3d, 6th, 7th. 8th, 10th, 11th, 12th, 17th, 21st, 22d, 25th, 29th, 30th.

Thunder and Lightning, 10th, 30th.

Gales. 40m, 18th, W.N.W.; 41m, 30th, S.S.W.

*Temperature in ground shelter.

**Reduced to freezing and sea-level.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.14	30 04	30.102	87.0	3 P	62 0	3:30 A	74.5	71.4	61.7	10.8
2	30.07	29.85	29 952	92.0	1:30 P	62.5	5:30 A	77.3	76.0	70.3	9.7
3	29 87	29.81	29.830	87.5	0:30 P	68.0	4:30 A	77.7	76.6	72.7	9.5
4	30.02	29 87	29 996	82.0	3 P	60 0	12 P	71.0	69.6	60.5	8.5
5	30.03	29.96	29.996	84.0	3:30 P	49 0	7 A	66.5	66.4	59 0	10.6
6	29.96	29.82	29.874	80.5	6 P	64.0	7 A	72 3	69.2	66.7	6.5
7	30.04	29.86	30.002	88.0	3:30 P	58.0	12 P	73.0	71.5	62.5	11.0
8	30.12	30.03	30.101	84.0	1:30 P	49 5	6:30 A	66.7	66.1	57.3	11.9
9	30.12	30.02	30 077	87 0	2:30 P	48.0	5 A	67.5	65.9	57 5	11.7
10	30.04	29 95	30.033	87.0	2 P	55 5	5 A	71.3	70.0	63.5	10.5
11	30 12	30 02	30.083	76 5	1 P	62.5	5 A	69.5	67.2	63.7	2.7
12	30.13	30.07	30.106	71.5	4 P	61.0	5 A	66.3	66.1	64.3	1.1
13	30.13	30.02	30.066	78 0	2 P	58 0	12 P	68 0	68 2	61.7	11.2
14	30.14	30.05	30.107	78.0	3 P	48 5	6:30 A	63.3	62.2	55.0	11.0
15	30.07	29.90	29.998	79.0	2 P	48.5	6 A	63.7	62.7	55.5	8.7
16	30.15	30 02	30.128	77.0	4 P	49 0	12 P	63.0	60 9	53.3	11.3
17	30.15	29.72	29.934	66.5	12 P	42.5	5:30 A	54.5	56.7	57.7	0.8
18	29 94	29.70	29 792	73.5	11 A	61.0	12 P	67.3	67.9	58.7	9.0
19	30.23	29.94	30.160	75.5	3 P	48.0	12 P	61.7	60.0	51.6	11.7
20	30.33	30.23	30.298	74.5	4 P	42.0	4:30 A	58 3	56.7	49.0	8.7
21	30 33	29.89	30.134	67 0	12 P	55.0	4:30 A	61.0	59.2	58.3	0.0
22	29.93	29.82	29.890	78 5	3 P	62.5	6:30 A	70.5	70.8	62.3	11.1
23	30.04	29 82	29.932	76 5	0:30 P	54.0	12 P	65.3	66 1	58.3	11.0
24	30.20	30 04	30.171	79.0	3:30 P	43.5	6:30 A	61.3	60.2	52.7	11.0
25	30.11	29 84	29.958	72.0	1:30 P	53.0	5:30 A	62.5	62.1	61.7	3.1
26	30.13	29.93	30.084	73 5	3:30 P	47 0	12 P	60.3	59 5	50.7	11.2
27	30.16	29 91	30.056	72.5	3 P	36.0	7 A	54.3	54.5	48 3	9.5
28	30.00	29 84	29.908	78.0	1 P	58 0	0 A	68.0	66 1	62 3	5.0
29	30 08	29.95	30.032	86.0	2:30 P	58.0	6:30 A	72 0	69 5	63 7	7.4
30	29 95	29 54	29.780	81.5	2 P	56.0	12 P	68.7	78.2	61.5	4.7

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	59 0	.630	80.0	S.S.W.	82	0.0	—	—				
2	69.5	.802	90.0	S.S.W.	74	0.0	—	—				
3	70.5	.915	84 0	S.S.W.	59	0.5	10	12 M	0:30 P	1:30P	.02	
4	56.5	647	71.5	E.S.E.	87	0.0	—	—				
5	54 0	.637	69.0	S.	71	0 0	—	—				
6	66.0	.688	92.5	S.S E.	57	0.0	—	—	1 A	3 A	T	
7	60.0	697	82.5	N.W.	48	0.0	—	—	11:00P	12 P	.01	
8	52.5	.580	69.5	N.N.W.	55	0.0	—	—	0 A	5 A	.11	
9	52.5	574	71.0	S.	44	0 0	—	—				
10	62.0	644	87.0	S.S.W.	119	2.5	22	7 P	7:30 P	9 P	.41	
11	62.5	.634	9.00	S.	98	1.0	14	3 P	2 P	6:30P	.04	
12	63 0	.654	89.0	S.S.W.	118	0.5	10	1 P	4 A	6 A	.07	
13	57.0	.698	68.0	N.	144	1.5	17	11 A				
14	51.0	.516	72 5	N N E.	120	0.5	10	9 A				
15	53.0	.496	82.0	W.	69	1.5	17	6 P				
16	50.5	.460	80.0	N.E.	80	0 0	—	—				
17	56 5	.508	94 5	S.S.W.	108	3.0	24	1 P	10 A	9 P	.11	
18	52.5	.668	60.0	W.	282	8.0	40	2 P				
19	45 5	.448	68.5	N.W.	146	2.0	20	9 A				
20	44.5	.415	71.5	N.W.	50	0 0	—	—				
21	56.5	.534	87.5	S.	152	4.5	30	10 P	12 M	12 P	.77	
22	58 5	.690	71.5	S.W.	262	1.5	17	10 A	0 A	2 A	.07	
23	53.5	.455	69.5	S W.	230	3.0	24	12 M				
24	49.5	.455	79.5	S.	42	0.0	—	—				
25	61 0	.578	93.5	S.	191	5 0	32	2 P	9 A	8 P	.09	
26	46 0	.438	70.5	N.W.	178	2.0	20	10 A				
27	45.5	.398	80.5	S.S.E.	96	2 5	22	3 P				
28	61.5	.506	89 5	S S.W.	145	2.0	20	5 A				
29	62.5	.658	90 5	S.W.	84	2.0	20	6 P	0 A	8:30 A	T	
30	58.0	.635	79.0	S.W.	277	8 5	41	4 P	7:30 A	6:30 P	.14	

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was marked by a large amount of sunshine and a comparatively small precipitation. During the first ten days the maximum temperature was above 80 degrees each day and the period was much warmer than usual. The last two days were also extremely warm. The persistency of the wind from near the south point of the compass was especially noticeable and the small precipitation with so much south wind was very unusual. The absence of any frost during the entire month was also an exceptional feature.

The records of the several weather elements show the following features when compared with their respective normals: The barometer records showed no unusual features, excepting the very rapid fall preceding the storm on the last day of the month. The range of pressure was rather small.

The mean temperature was more than four degrees higher than the normal and the maximum more than five degrees higher than usual. Owing to a rather high minimum, the range was not much larger than usual. Several days showed a mean hourly temperature above 70 degrees.

The mean dew point was comparatively high and the relative humidity nearly normal.

The total precipitation was less than half the normal, only two storms showing any considerable amount.

The total wind movement was slightly greater than the normal, but the record for the first ten days — the period of high maximum temperatures—was very small.

While there were several cloudy days, the total amount of cloudiness was small.

J. E. OSTRANDER, Meteorologist.

G. E. LINDSKOG, Observer.

BULLETIN No. 394. OCTOBER, 1921

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.17, 26th, 8 A
Minimum reduced to freezing,	29.03, 20th, 3 P
Reduced maximum reading	30.48 26th, 8 A
Reduced minimum reading,	29.33, 20th, 3 P
Mean semi-daily reduced	29.974
Monthly range	1.15

Air Temperature. In Degrees Fahr.

Highest	79.5, 15th, 3:00 P
Lowest	21.5, 27th, 7 A
Mean hourly	50.4
Mean of means of max. and min.	50.9
Mean sensible (wet bulb)	44.4
Monthly range	58.0
Highest mean daily	60.5. 2d, 3d
Lowest mean daily	37.1, 26th
Mean maximum	63.3
Mean minimum	38.4
Mean daily range	24.9
Greatest daily range	48.5 15th
Least daily range	7.0, 21st

Humidity.

Mean dew point	40.3
Mean force of vapor	.348
Mean relative humidity	76.3

Precipitation. In inches.

Total precipitation, in inches	1.08
Number of days on which .01 inch or more rain fell	5

* Temperature in ground shelter.

** Reduced to freezing and sea-level.

Wind.

Total movement	4494 m
Greatest daily movement	305m, 21st
Least daily movement	29m, 29th
Mean daily movement	145m
Mean hourly velocity	6.0m

Maximum pressure per square foot, 12.0 lbs = 49m per hour, 10th, 2 P, S.S.E.

Maximum velocity for 5 minutes, 30m per hour, 10th, 2 P, S.S.E.

Prevailing direction, Southwest.

Summary.

South Southwest	32 per cent
Northwest	13 " "
Southwest	10 " "
South	10 " "
North	10 " "
Other directions	25 " "

Weather.

Mean cloudiness observed	42 per cent
Total cloudiness recorded by the Sun Thermometer	135 hours = 37 per cent.
Number of clear days	11
Number of fair days	10
Number of cloudy days	10

Bright Sunshine.

Number hours recorded, 206, = 68 per cent.

Rain. 3d, 8th, 9th. 10th, 12th, 19th, 20th, 25th.

Thunder and Lightning. 12th, 20th.

Frosts. 9th, 13th, 14th, 15th, 26th, 27th, 28th, 29th, 30th, 31st.

Gales. 35m, 8th, S.S.W.: 49m, 10th, S.S.E. 35m, 12th, W.N.W.: 36m, 23d, N.W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum.	Minimum.	Mean, Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	29 98	29 83	29.938	68.0	2:30 P	46.5	7 A	57.3	56.8	49 0	10.9
2	30.00	29.91	29.966	77.5	2:30 P	45 0	7 A	61.3	60.5	54.0	9.8
3	29.91	29.50	29 641	65.0	2 P	56.0	0:30 A	60.5	60 5	59.3	1.2
4	27.65	29.49	29.606	66 5	2:30 P	45.0	12 P	55.7	54.8	47 3	10.2
5	29 80	29.64	29 734	60.0	3 P	41.0	6:30 A	50.5	50.2	45 5	9.2
6	29.98	29 79	29.878	68.0	2:30 P	44.0	4:30 A	56.0	55.2	48.5	8.7
7	30.01	29.72	29.885	72.0	2 P	38 0	7 A	55.0	56.3	49.5	8.2
8	29.72	29.51	29.563	64 5	9:30 A	43.0	12 P	53.7	54 6	51.3	1.0
9	29.87	29.72	29.840	48 0	2 P	33.0	7 A	40.5	42 9	41.7	3.3
10	29 90	29.65	29.856	69 0	3 P	39 0	4:30 A	54.0	53.7	50 3	3.5
11	29.94	29.72	29 858	75.0	4 P	41 5	7:30 A	58.3	56.3	49.0	8 5
12	29.90	29.60	29 705	59.0	2 P	44.0	12 P	51.5	50 0	45.0	5.0
13	30 31	29 90	30.241	55.0	3 P	32.5	7 A	43 7	43.8	36 5	10.0
14	30 43	30.31	30.402	68.5	3 P	33.0	7A	50.7	50.8	43.7	9.9
15	30.42	30.21	30.326	79.5	3 P	31.0	7A	55.3	53.8	46.3	9.9
16	30 21	30 09	30.178	75.5	4 P	34 0	7 A	54 7	53.7	45.5	9.8
17	30 17	30 09	30.142	55.5	2 P	48 5	7 A	52.0	51 6	48.3	0.5
18	30 09	29 89	29.986	66 0	2:30 P	48.5	4:30 A	57.3	55.5	52 0	2.9
19	29 89	29.63	29 676	68 5	2:30 P	56.5	2:30 A	62.5	60.2	53.7	7.3
20	29.63	29.33	29 428	57.5	0 A	46 0	12 P	51.7	51.8	47.3	0.0
21	29.79	29.48	29.648	49.5	1 P	42.5	12 P	46.0	45.8	39 5	5.4
22	29.85	29 58	29.737	67.5	3 P	37.5	5:30 A	52.5	54 0	45.5	9.5
23	30.19	29.72	30.051	61.5	1:30 P	38.5	12 P	50.0	53.0	41.7	9.5
24	30.22	29 92	30.106	53.5	3 P	33.0	2 A	43.3	44.3	39.3	4.3
25	30.33	29.90	30.124	50.5	2 P	34.0	12 P	42.3	42.3	36.5	3.8
26	30.48	30.33	30.450	55.0	4 P	25.5	7:30 A	40.3	37 1	30 7	9.7
27	30 45	30.29	30.374	62.0	3 P	21.5	7 A	41.7	40.3	31.3	9.1
28	30.31	30.23	30 306	56.5	3 P	25.0	7 A	40.7	39.3	33 7	5.5
29	30 34	30 20	30.274	61.5	3 P	27.5	6:30 A	44.5	41.5	35.7	8.8
30	30.21	30.14	30.188	69.5	3 P	31.0	5 A	50.3	45.7	38 7	7.5
31	30.17	30.00	30.094	56 0	4 P	29.5	7:30 A	42 7	44.2	40.0	3.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	44 0	.427	68.0	W.S.W.	166	2 5	22	2 P				
2	49.5	.506	71.0	S.S.W.	159	1.5	17	7 P				
3	58.5	.530	93 0	S.S.W.	120	1.0	14	10 A	1:30 P	10 P	.06	
4	44 0	.374	76.0	N.N.W.	125	1.5	17	10 A				
5	41.5	.350	74.5	N.	164	3.5	26	4 P				
6	45 0	.380	80.5	S.W.	202	3 5	26	12 M				
7	47.0	.426	81 0	S.	149	5.0	32	11 P				
8	48.0	.453	76.5	N.W.	283	6 0	35	4 A	2 P	8 P	.19	
9	39 0	.288	83 0	S.S W.	135	2.0	20	2 P	11 A	8 P	T	
10	47.0	.427	79.5	S.S E.	178	12 0	49	2 P	8:30A	9 A	T	
11	47.5	.381	87.5	S S.W	53	0 0	—	—				
12	41.0	.338	78 5	W.N.W.	102	6 0	35	4 P	6 A	2:30P	.29	
13	30.0	.252	65.5	N. W.	205	2 0	20	12 M				
14	38.5	.342	72.0	S.S.W.	126	1.5	17	1 P				
15	44.0	.356	86 0	S S.W.	59	0 0	—	—				
16	41.5	344	79 5	S S.W.	86	2.5	22	8 P				
17	46.0	.362	86.5	E	130	1.5	17	0 A				
18	49.5	.430	85.0	S.S W.	179	3 0	24	4 P				
19	50 0	.484	76.0	S.S.W.	178	1.5	17	3 A	0:30 A	5 A	.02	
20	44 5	.362	81.5	N.	164	2.5	22	6 P	1 A	4 P	.52	
21	32.0	.293	63 0	W N.W.	305	5.0	32	3 P				
22	38.5	.390	62 0	S W.	248	3 5	26	11 A				
23	32 5	.350	55 0	N.W.	284	6.5	36	1 A				
24	35.0	.278	76.5	W.S.W.	47	0.0	—	—				
25	31 5	.243	75 0	N	228	5 0	32	4 P	2:30 A	3:30 A		
26	27.0	.186	78 0	N W.	122	1.5	17	9 A				
27	23 0	.218	60.5	S.W.	63	0 0	—	—				
28	30.0	.220	79.5	S.	43	0.0	—	—				
29	30.5	.243	72 0	S.S.W.	29	0 0	—	—				
30	36.0	.253	84.0	E.	49	1.0	14	1 P				
31	36.5	.298	78 0	S.	53	0.5	10	4 P				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during October was generally pleasant with a large amount of sunshine. The first frost of the season occurred on the 9th and the first killing frost on the 13th. The persistency of wind from the southwest quadrant was very noticeable and gave the impression that the month was milder than usual. The small precipitation tended to augment an already droughty condition, and at the close of the month rain was badly needed. The ground water needs replenishing before winter sets in.

The records of the several weather elements compared with their respective normals show the following features: The mean barometer was rather low and the range of pressure practically normal. The total wind movement was nearly ten per cent more than usual and several gales were recorded.

The mean temperature was practically normal and the maximum and minimum records both near their average values. The range of 48.5 degrees on the 15th was an exceptionally large value. Frosts were numerous after the middle of the month.

The mean dew point was slightly lower than usual and the relative humidity a little above the normal.

The total precipitation was only about thirty per cent of the normal and there was practically no rain the last third of the month.

The amount of sunshine was large and there were many pleasant days.

J. E. OSTRANDER, Meteorologist.

G. E. LINDSKOG, Observer.

BULLETIN No. 395. NOVEMBER, 1921

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.20, 8th, 8 A
Minimum reduced to freezing,	29.20, 5th, 4 A
Reduced maximum reading	30.52, 8th, 8 A
Reduced minimum reading,	29.50, 5th, 4 A
Mean semi-daily reduced	30.081
Monthly range	1.02

Air Temperature. In Degrees Fahr.

Highest	66.0, 19th, 4:00 P
Lowest	22.0, 8th, 7 A
Mean hourly	37.4
Mean of means of max. and min.	37.9
Mean sensible (wet bulb)	34.4
Monthly range	44.0
Highest mean daily	58.3. 19th
Lowest mean daily	27.7, 24th
Mean maximum	44.0
Mean minimum	31.8
Mean daily range	12.2
Greatest daily range	29.5 20th
Least daily range	3.0, 19th

Humidity.

Mean dew point	30.6
Mean force of vapor	0.223
Mean relative humidity	80.3

Precipitation. In inches.

Total precipitation, in inches	6.20
Number of days on which .01 inch or more rain fell	22
Total Snow in inches	3.0

Wind.

Total movement	4441 m
Greatest daily movement	424m, 5th
Least daily movement	16m, 14th
Mean daily movement	148m
Mean hourly velocity	6.2m
Maximum pressure per square foot,	18.5 lbs= 61m per hour, 5th, 7 A, N.W.
Maximum velocity for 5 minutes,	36m per hour, 5th, 7 A, N.W.

Prevailing direction, North Northwest.

Summary.

North	27 per cent
North Northeast	17 " "
South Southwest	10 " "
Northwest	13 " "
Other directions	33 " "

Weather.

Mean cloudiness observed	66 per cent
Total cloudiness recorded by the Sun Thermometer	196 hours = 67 per cent.
Number of clear days	3
Number of fair days	9
Number of cloudy days	18

Bright Sunshine.

Number hours recorded, 97, = 33 per cent.

Rain, 1st, 2d, 3d, 4th, 7th, 9th, 10th, 11th, 12th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 24th, 25th, 26th, 27th, 28th.

Snow, 7th, 14th, 24th, 26th.

Frosts before the 15th, 8th, 11th, 13th.

Hail, 9th, 24th, 28th.

Gales, 61m, 5th, N.W.: 35m, 7th, N.W.: 35m, 15th, W.N.W.: 36m, 19th, S.S.W.

*Temperature in ground shelter.

**Reduced to freezing and sea-level.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.00	29.58	29.736	54.0	9 P	46.5	7 A	50.3	50.1	49.7	0.0
2	29.92	29.59	29.816	49.5	0 A	41 0	8 P	45.3	44.5	40.3	0.2
3	30.01	29.83	29 943	45.5	4 P	37.0	2 A	41.3	42.2	40.8	0.0
4	29.84	29.60	29.772	49 0	1:30 P	36.0	6 A	42.5	42.5	38 0	4.9
5	30.02	29.50	29.788	46.0	2 P	32.0	12 P	39.0	39.7	31.5	8.0
6	30.25	30.02	30.226	43.0	2:30 P	26.5	7:30 A	34.7	33.4	26.5	8.5
7	30.28	29.94	30.068	48.5	2:30 P	28.0	7:30 A	38.3	37.1	32.5	5.7
8	30.52	30.28	30.500	39.5	4 P	22.0	7 A	30.7	31.1	25.3	6.3
9	30.48	29.93	30.272	33.5	7 A	30.5	0 A	32.0	32 0	29.5	0.0
10	30.00	29.73	29.885	41.0	4 P	29.0	12 P	35.0	33.4	30.0	0.8
11	30.07	29.92	30.010	47.5	2 P	26.0	7 A	36 7	36.5	34.5	6.2
12	29.92	29.79	29.840	40.0	2 P	33.0	7:30 A	36.5	36.7	35.5	0.2
13	30.18	29.88	30.108	40.0	1:30 P	28.5	12 P	34 3	33.8	28.7	8.2
14	30.18	29.85	30.048	32.5	8 P	27.0	1 A	29.7	30.5	30.0	0.0
15	30.16	29.83	30.016	47.0	2 P	29.5	7 A	38 3	37.6	34.0	7.7
16	30.35	30.16	30.338	52.5	3 P	29.5	7:30 A	41 0	39 2	33.3	7.4
17	30 26	30.12	30.184	43.5	3 P	36.0	6 A	39.7	40 3	39.7	0.0
18	30.25	30.12	30.222	48 5	4 P	40.0	5 A	44 3	44 1	44 0	0.0
19	30.23	30.01	30.108	66.0	4 P	46.0	0 A	56.0	58.3	58.5	5.8
20	30.48	30.00	30.385	62.0	0 A	32 5	12 P	47 3	43.7	37.3	2.0
21	30.44	30.28	39 352	39 0	4 P	31.0	3 A	35.0	34.9	34 0	1.0
22	30.28	30.12	30.205	54.0	3 P	35.0	8 A	44.5	42 2	37.7	7.5
23	30.41	30.05	30.414	37.0	0 A	28.0	12 P	32.5	30.7	26.5	2.6
24	30.37	29 75	29.988	35.0	11 P	24.0	6 A	29.5	27.7	28.0	0 0
25	30.16	29.82	30.178	43.0	3 P	30.0	6 A	36.5	35.8	32.7	9.0
26	30.33	30.14	30.238	34.0	0 A	28.0	7 A	31 0	31 0	29.3	0.0
27	30.26	30.09	30.181	34.0	6 A	29 5	8 P	31.7	30.9	29 5	0.0
28	30.09	29.86	29.924	35.0	4 P	30.5	0 A	32.7	33.0	31.3	0.0
29	29 87	29.79	29.826	35.5	6 P	30.0	11 P	32.7	32 0	31.5	0.5
30	29.94	29.76	29.848	44.5	2 P	31.0	0 A	37.7	36.9	32 7	4.4

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	48.5	.370	93.5	N.N.E.	81	1.5	17	11 P	4:30 A	11 P	.49	
2	37 5	.270	84.5	N.N.E.	262	2.5	22	3 P	0 A	7 A	.02	
3	39.0	.266	90.0	E.S E.	62	0.0	—	—	8:30 A	11 P	.03	
4	33.5	.262	72 5	W.	182	4.5	30	3 P	9 P	12 P	.02	
5	22.0	.218	55.5	N.W.	424	18.5	61	7 A				
6	18.5	.165	63 5	N.N.W.	198	1 5	17	3 A				
7	26.5	.216	72.0	N.	155	6.0	35	6 P	1:30 A	9 A	.02	½
8	14.5	.168	53.5	N.	140	1.5	17	1 A				
9	25.5	.177	80 0	N.	146	1.0	14	3 P	7 A	12 P	.21	
10	27.0	.176	84.5	N.	138	5.0	32	3 P	0 A	2 P	.52	
11	30.5	.221	78.0	S.S.W.	109	0.0	—	—	6 P	12 P	.04	
12	34.5	.214	91.0	N.	87	0.5	10	2 P	0 A	12 P	.10	
13	23.5	.177	73.5	N.W.	149	1.0	14	12 M				
14	28.0	.168	92 5	S.E.	16	0 0	—	—	5 A	12 P	.20	½
15	28.5	.224	70.0	W.N.W.	195	6.0	35	2 P	0 A	2:30 A	.06	
16	27.5	.219	69.5	S.S.W.	102	1.0	14	11 P	11 P	12 P	.05	
17	39.0	.250	96.0	E.	128	0 0	—	—	0 A	12 P	.46	
18	43.5	.288	98.0	N.W.	46	0 0	—	—	0 A	12 P	.12	
19	58.0	.532	90 5	S.S.W.	253	6.5	36	6 P	0 A	7 A	.01	
20	35.0	.242	84.5	N.	266	3.5	26	3 A	0 A	7 A	.65	
21	31.5	.206	88.5	N.N.W.	95	1.0	15	5 A	0 A	11 A	.02	
22	34.5	.200	83 0	S.W.	144	2.0	20	10 P				
23	20.0	.162	68 0	N.	127	0.5	10	7 P				
24	26.0	.166	88.5	N.	20	4.0	28	11 P	1 A	11 P	.44	1
25	28.0	.212	75.0	W.N.W.	231	5.0	32	4 A	7:30 A	8 A	.14	
26	25.0	.174	79.0	N.E.	35	0 0	—	—	1:30 P	12 P	.32	1
27	26.5	.175	84.0	N N.E.	87	0.0	—	—	0 A	12 P	.62	
28	29.0	.183	87 5	N.N.E.	149	3 0	24	7 P	0 A	5 P	1.66	
29	29.0	.184	90.0	N.N E.	296	2.5	22	2 A				
30	27.5	.208	72.5	N.W.	118	3.0	24	1 P				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during November was unusually cloudy and a heavy precipitation occurred. Precipitation was noted on about three-fourths of the days and considerable snow fell. Near the close of the month a storm of snow, sleet and rain extended over a perid of nearly five days and ice formed on trees and shrubs, doing considerable damage. This storm, however, was less severe than in the eastern part of the state. On account of the large amount of rain and cloudiness the relative humidity was extremely high. The daily range of temperature was generally small and the monthly range considerably less than usual. An unusually severe gale was registered on the 5th.

Comparing the records of the several weather elements with their respective normals the following features are noted: The mean barometer was high and the range of pressure smaller than usual. The minimum barometer was above the November average for this feature. The wind was largely from near the north point of the compass and the heavy storm mentioned above was a northeast storm.

The mean temperature was about one degree lower than the normal. The maximum temperature was nearly two degrees higher than usual, and the minimum temperature was more than eight degrees higher than the normal for this feature.

The mean dew-point was practically normal and the relative humidity nearly five points higher than usual.

The total precipitation was nearly double the usual amount, and about one-half of it occurred during the last week of the month.

The total wind movement was slightly less than the normal.

The amount of bright sunshine was extremely small and only three clear days were noted.

J. E. OSTRANDER, Meteorologist.

G. E. LINDSKOG, Observer.

BULLETIN No. 396. DECEMBER, 1921

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.46, 16th, 10 A
Minimum reduced to freezing,	29.05, 12th, 4 P
Reduced maximum reading	30.79 16th, 10 A
Reduced minimum reading,	29.36, 12th, 4 P
Mean semi-daily reduced	30.005
Monthly range	1.43

Air Temperature. In Degrees Fahr.

Highest	57.0, 18th, 7:00 A
Lowest	-1.0, 22d, 7:30A
Mean hourly	25.7
Mean of means of max. and min.	25.8
Mean sensible (wet bulb)	22.7
Monthly range	58.0
Highest mean daily	46.0. 18th
Lowest mean daily	6.7, 30th
Mean maximum	34.4
Mean minimum	17.1
Mean daily range	17.3
Greatest daily range	31.0 21st
Least daily range	5.5, 25th

Humidity.

Mean dew point	17.7
Mean force of vapor	0.143
Mean relative humidity	78.5

Precipitation. In inches.

Total precipitation, in inches	1.90
Number of days on which .01 inch or more rain fell	8
Total Snow in inches	5.5
Days of sleighing	7

Wind.

Total movement	4704 m
Greatest daily movement	461m, 18th
Least daily movement	21m, 5th
Mean daily movement	152m
Mean hourly velocity	6.3m

Maximum pressure per square foot, 29 lbs= 76m per hour, 18th, 5 A, W.S.W.

Maximum velocity for 5 minutes, 36m per hour, 18th, 7 A, W.S.W.

Prevailing direction, West Northwest.

Summary.

North	16 per cent
North Northeast	10 " "
West Northwest	19 " "
South Southwest	10 " "
Northwest	16 " "
Other directions	29 " "

Weather.

Mean cloudiness observed	45 per cent
Total cloudiness recorded by the Sun Thermometer	131 hours = 46 per cent.
Number of clear days	14
Number of fair days	5
Number of cloudy days	12

Bright Sunshine.

Number hours recorded, 152, = 54 per cent.

Rain, 2d, 12th, 17th, 18th,

Snow, 12th. 16th, 21st, 23d, 24th, 29th.

Gales, 54m, 3d, W. N.W.: 40m, 6th, W. N.W. 40m., 7th, W. N. W.: 76m., 18th, W.S.W.: 38m., 19th, W. N. W.: 47m., 21st, W. N. W.: 35m. 22d, N. W.: 36m. 29th. N. N.W.: 39m., 30th, N.

*Temperature in ground shelter.

**Reduced to freezing and sea-level.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.12	29.94	30.062	47.0	4 P	29 0	12 P	38.0	37.0	31.5	8.6
2	30.10	29.51	29.878	39.0	12 P	24.5	7:30 A	31.7	30.8	31.0	0.0
3	29.89	29.51	29.818	45.5	5:30 A	36.5	12 P	41.0	39.7	34.3	5.8
4	29.91	29.63	29.787	36.5	0 A	28.0	12 P	32.3	33.8	27.3	0.4
5	29.63	29.49	29.568	37.5	4 P	19.5	7:30 A	28.5	28.4	24.5	7.5
6	29.77	29.48	29.690	34.0	3 P	23.5	9 A	28.7	28.7	24.0	7.8
7	30.06	29.77	29.957	36.0	3 P	25 5	12 P	30.7	29.4	23.3	8.3
8	30.15	30.06	30.108	32.5	3 P	15.5	7 A	24.0	22.8	17.7	7.6
9	30.06	29.96	30.025	33.5	3 P	11.0	7 A	22.3	24.0	20.0	7.8
10	30.01	29.63	29.798	42.0	2 P	28.5	8 A	35.3	34.4	30 0	7.5
11	29.68	29.56	29.624	43.5	3:30 P	27.0	12 P	35.3	34.8	30.5	2.7
12	29.56	29.36	29.424	33.0	9 P	23.0	2 A	28.0	29.3	29.0	0.0
13	29.64	29.40	29.518	30.0	0 A	20.0	12 P	25 0	26.2	23.7	1.8
14	29.93	29.64	29.806	29.0	3 P	11.5	7:30 A	20.3	19.2	15.0	7.8
15	30.54	29.93	30.310	27.5	3 P	9.5	7:30 A	18 5	17.4	13.0	8.4
16	30.79	30.49	30.684	25.0	12 P	3.0	8:30 A	14 0	15 8	14.0	7.5
17	30 49	29.91	30.180	50.0	10 P	25.0	0 A	37.5	38 8	40.0	0.9
18	30.07	29 61	29.806	57 0	7 A	36.0	12 P	46.5	46 0	39 7	5.9
19	30.41	30.07	30.298	40.0	3 P	25.0	12 P	32.5	34.0	27.7	8.0
20	30.48	30.06	30.308	36.5	3:30 P	19 5	7:30 A	28 0	27.0	22.5	3.0
21	30.20	29.82	29.985	37.0	12 M	6.0	12 P	21.5	24.7	19.3	1.2
22	30.46	30.20	30.440	17.5	3:30 P	-1.0	7:30 A	8.3	7 8	3.5	8.3
23	30.40	29.95	30.110	22.0	12 P	6.5	2 A	14.3	14.4	15.7	0.0
24	30.17	29 93	30.065	33.0	2 P	22.0	0 A	27.5	28.0	28.7	0 0
25	30.37	30.17	30.316	26.0	0 A	20.5	7 A	23.3	22.5	22.0	0.0
26	30.46	30.32	30.412	32.0	3:30 P	8.0	9 A	20.0	17 2	13.0	8.0
27	30.32	30.03	30.154	31.0	4 P	10.5	5 A	20.7	20.5	21.5	5.5
28	30.38	30.01	30.256	31.5	3 P	7.5	8:30 A	19.5	19.8	13.3	8.4
29	30.06	29.69	29.884	37.0	2 P	8.0	12 P	22.5	24 0	19.5	1.8
30	30.23	30.06	30.182	15.0	3:30 P	0.0	7:30 A	7.5	6.7	3 0	6.0
31	30.11	29.50	29.703	31.0	12 P	2.0	1 A	16.5	13.6	13.3	0.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	27.5	.194	78.0	N.W.	24	1.0	14	1 P				
2	29 5	.181	95.0	E.N.E.	27	0.0	—	—	9 A	11:30P	.78	
3	25.0	.242	57.0	W.N.W.	298	14.5	54	6 P				
4	18.5	.176	57.5	N.W.	136	3.5	27	0 A				
5	22.5	.139	91.5	S.S.W.	21	0.0	—	—				
6	16.0	.148	63 5	W.N.W.	345	8 0	40	4 P				
7	14.0	.146	57.0	W.N.W.	231	8.0	40	10 A				
8	14 0	.106	82.0	N.N.W.	64	0.0	—	—				
9	16.0	.128	79 0	W.N W.	58	1.5	17	3 P				
10	25.5	.182	77.0	S.S.W.	170	3.0	24	11 A				
11	27.0	.183	82.0	S.	102	0.5	10	3 P				
12	27.0	.168	92.0	S.	39	2.0	20	11 P	7:30 A	9 P	.15	2
13	20.0	.138	79.0	N.	202	2.5	22	11 A				
14	9.5	.095	76 5	N.N.W.	136	2.0	20	11 P				
15	9.5	.085	82.5	N.N.W.	234	3.0	24	2 P				
16	11.5	.094	86.5	N.N.E.	70	1.5	17	1 A	8 P	10 P	.01	1/4
17	38.0	.265	89.5	S.S W.	220	5.0	32	9 P	9 P	12 P	.06	
18	33.5	.282	71.5	W.S.W.	401	29 0	76	5 A	0 A	9 A	.52	
19	17.0	.180	55.0	W.N.W.	363	7.0	38	2 A				
20	17.0	.136	73.0	S. W.	77	1.0	14	10 P				
21	13.5	.122	76.0	W.N.W.	275	11.0	47	7 P	5 A	6:30 A	.05	1/2
22	−1.5	.056	75 0	N. W.	208	6.0	35	0 A				
23	13.5	.096	90 5	E.S.E.	22	0.0	—	—	4 A	12 M	.05	3/4
24	28.0	.160	97.5	N.	38	0.5	10	2 P	1 A	11 P	.28	2
25	19.5	.124	87.5	N.	75	2.0	20	9 P				
26	11.0	.083	89.5	N.	75	1.0	14	0 A				
27	19.0	.126	92 0	N W.	105	5.5	33	9 P				
28	6.5	.090	71 0	W.	85	3 0	24	2 P				
29	15.0	.168	79.5	S.W.	195	6.5	36	7 P	7:30 A	11 A	T	T
30	−4.5	.054	68.0	N.	168	7.5	39	3 A				
31	9.5	.094	80.5	N.W.	180	1.0	14	11 P				

**Rain or melted snow at base of tower. * Included in following day.

Annual Summary for 1921.

Pressure. In inches.

Maximum reduced to freezing, ... 30.56, Jan. 19th, 10 A.
Minimum reduced to freezing, ... 29.03, Oct. 20th, 3 P.
Maximum reduced to freezing and sea-level, ... 30.90, Jan. 19th, 10 A.
Minimum reduced to freezing and sea-level, ... 29.33, Oct. 20th, 3 P.
Mean semi-daily reduced to freezing and sea-level, ... 30.040
Annual range, ... 1.57

***Air Temperature.** In degrees Fahr.

Highest, ... 96.0, June 22d, 3:00 P.
Lowest, ... —6.0, Jan. 19th, 7 A.
Mean hourly, ... 49.5
Mean of means of max. and min., ... 49.8
Mean sensible (wet bulb), ... 44.4
Annual range, ... 102.0
Highest mean daily, ... 80.6, July 8
Lowest mean daily, ... 4.0, Jan. 19
Mean maximum, ... 60.5
Mean minimum, ... 39.0
Mean daily range, ... 21.5
Greatest daily range, ... 48.5, Oct. 15
Least daily range, ... 3.0, Nov. 19th.

Humidity.

Mean dew point, ... 40.4
Mean force of vapor, ...405
Mean relative humidity, ... 76.0

Wind.

Prevailing direction, ... West Southwest

Summary.

South Southwest . . . . . 22 per cent
North . . . . . 10 " "
Northwest . . . . . 10 " "
Other directions, ... 58 " "
Total movement, ... 52,373 m
Greatest daily movement, ... 465 m., Jan. 25
Least daily movement, ... 13 m., July 4
Mean daily movement, ... 143 m
Mean hourly velocity, ... 6.0 m
Maximum pressure per square foot, 29.0 lbs.,= 76 m. per hour, Dec. 18th, 5:0 A., W.S.W.
Maximum velocity for 5 minutes, 36 m. per hour, Nov. 5th, 7 A. N.W.; Dec. 18th, 7 A. W.S.W.

Precipitation. In inches.

Total precipitation, rain or melted snow, . 42.22
Snow total in inches, ... 37.5
Number of days on which .01 or more rain or melted snow fell, ... 131

Weather.

Mean cloudiness observed, ... 50 per cent.
Total cloudiness recorded by Sun Thermometer, ... 1819 hrs.=40 per cent.
Number of clear days, ... 126
Number of fair days, ... 141
Number of cloudy days, ... 98

Bright Sunshine.

Number of hours recorded, 2695 hrs.=60 per cent.

Daes of Frosts.

Last, ... May 12th
First, ... Oct. 9th

Dates of Snow.

Last, ... April 18th
First, ... Nov. 7th
Total days of sleighing, ... 28

Gales of 50 or More Miles Per Hour.

Mar. 29th, 50m., N.; Nov, 5th, 61m., N.W.; Dec. 3d, 54m., W.N.W.; 18th, 76m., W.S.W.

Temperature in ground shelter.

G. E. LINDSKOG,
Observer.

J. E. OSTRANDER,
Meteorologist.

BULLETIN No. 397. JANUARY, 1922

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing, 30.36, 25th, 10 A	
Minimum reduced to freezing, 28.00, 11th, 12 P	
Reduced maximum reading	30.70, 25th, 10 A
Reduced minimum reading,	28.92, 11th, 12 P
Mean semi-daily reduced	30.177
Monthly range	1.78

Air Temperature. In Degrees Fahr.

Highest	41.0, 15th, 2:30 P: 30th, 3 P
Lowest	12.0, 24th, 9 A: 25th, 9 A: 26th, 8:30 A
Mean hourly	19.9
Mean of means of max. and min.	20.1
Mean sensible (wet bulb)	16.4
Monthly range	53.0
Highest mean daily	35.7. 19th
Lowest mean daily	2.2, 25th
Mean maximum	30.7
Mean minimum	9.6
Mean daily range	21.1
Greatest daily range	36.0 26th
Least daily range	8.5, 11th

Humidity.

Mean dew point	11.5
Mean force of vapor	.113
Mean relative humidity	78.5

Precipitation. In inches.

Total precipitation, in inches	1.56
Number of days on which .01 inch or more rain fell	6
Total Snow in inches	14¾
Days of sleighing	31

Wind.

Total movement	5353 m
Greatest daily movement	403m, 29th
Least daily movement	12m, 17th
Mean daily movement	173m
Mean hourly velocity	7.2m

Maximum pressure per square foot, 30 lbs= 78m per hour, 22d, 12 M, W.

Maximum velocity for 5 minutes, 12 m per hour, 22d, 12 M, W.

Prevailing direction, Northwest.

Summary.

Northwest	23 per cent
North	19 " "
Northeast	13 " "
West Northwest	13 " "
Southwest	10 " "
Other directions	22 " "

Weather.

Mean cloudiness observed	38 per cent
Total cloudiness recorded by the Sun Thermometer	104 hours = 36 per cent.
Number of clear days	16
Number of fair days	8
Number of cloudy days	7

Bright Sunshine.

Number hours recorded, 190, = 64 per cent.

Rain, 4th, 5th.

Snow, 3d. 8th, 9th, 11th, 14th, 18th 21st

Gales. 42m, 2d, N. W.: 36m, 11th, N. 36m., 12th, W. N. W.: 78m., 22d. W.: 38m., 29th, N. N. E.

*Temperature in ground shelter.

**Reduced to freezing and sea-level.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean, Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	29.86	29.51	29.690	35.5	2:30 A	12.5	12 P	24.0	25.8	22.0	7.2
2	30.29	29.86	30.168	13.5	3 P	2.0	8 A	7.7	6.9	2.0	8.3
3	30.32	30.09	30.198	10.5	12 P	−1.0	8 A	4.7	6.0	4.0	1.8
4	30.24	30.08	30.202	26.0	12 P	10 5	0 A	18.3	17.9	17.3	4.9
5	30.11	29.85	29.946	39.0	8:30 P	26.0	0 A	32.5	32 9	32.7	0.2
6	30.36	30.11	30.304	37.0	0 A	25.0	10:30 P	31.0	31.5	27.0	4.5
7	30.54	30.36	30.496	33.0	3 P	13.0	12 P	23.0	24.2	17.5	8.3
8	30.52	29.89	30.220	31.0	3:30 P	3.0	7:30 A	17 0	17 5	14.3	7.5
9	29.89	29.42	29 612	38.0	3:30 P	25 0	4:30 A	31.5	31.0	28.3	5.5
10	29.99	29.40	29.850	39.0	4 A	22.0	12 P	30.5	32.0	27.5	8.3
11	30.00	28.92	29.428	27.0	8:30 P	18.5	3 A	22.7	22.0	22.5	0.0
12	29.77	28.92	29.565	23.0	0 A	9.0	12 P	16.0	16.8	10.8	7.8
13	30.16	29.77	30.040	27 0	3:30 P	8.0	1 A	17.5	14.7	10 3	8.5
14	30.29	30.16	30.258	32.0	3 P	5.0	3 A	18.5	16.4	14.0	5.5
15	30 25	29.92	30.086	41.0	2:30 P	19.5	1 A	30.3	30.9	29.5	5.0
16	30.47	30.13	30.376	33 5	3 P	6.0	12 P	19.7	20.2	12.0	9.0
17	30.56	30.30	30.478	28.0	4 P	−6 5	7:30 A	10.7	9 0	5.0	8.0
18	30.30	29.93	30.033	36 0	5:30 P	14.0	0 A	25.0	25.9	25.7	3.9
19	30.00	29.74	29.846	38 5	8 P	29 5	0 A	34.0	35.7	36.5	0.0
20	30.32	29.77	30.205	40.5	2 A	19 5	12 P	30 0	27.9	22.5	7.8
21	30.29	29.97	30 082	32 0	4 P	11 5	12 P	21.7	21.5	18.3	0.2
22	30.35	29.94	30.152	36.0	12 M	6.5	5 A	21.3	18 1	18 0	8.1
23	30.59	30.35	30.554	15.5	3 P	−1.5	8 A	7.0	7 0	0.3	8.3
24	30.60	30.48	30.577	16.0	3 P	−12.0	9 A	2.0	2.7	−4.0	8.8
25	30.70	30.52	30.606	18.0	4 P	−12.0	9 A	3.0	2.2	−2.7	8.9
26	30.57	30 40	30.485	24.0	3:30 P	−12.0	8:30 A	6.0	6.3	−0.5	8 9
27	30.47	30.37	30.410	29.5	3:30 P	−2.0	7:30 A	13.7	12.7	6.0	8.8
28	30 40	30.14	30.278	32 5	7:30 P	7.0	7:30 A	19.7	21.5	23 5	2.0
29	30 40	30.12	30.298	38.0	2:30 P	27.0	12 P	32.5	31.3	28.3	6.0
30	30.55	30.40	30.537	41.0	3 P	15.0	7:30 A	28.0	26 6	20.0	0.3
31	30.59	30 36	30 491	40.0	3 P	9.5	7:30 A	24.7	22.9	18.5	8.2

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement In Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	14 5	.131	81.5	W N.W.	323	4.5	30	4 A				
2	−1.5	.050	84.0	N.W.	378	9 0	42	12 M				
3	1.0	.056	85.0	N.	136	1.5	17	4 A	3 P	5 P	.04	1¼
4	14.0	.106	84.5	N.	15	0.0	—	—	4 P	12 P	.06	
5	28.5	202	82.0	N.W.	55	2.5	22	11 P	0 A	2½ P	.30	
6	20.0	.164	66 0	N.W.	247	4.5	30	6 A				
7	12.5	.107	75.0	N. W.	150	1.5	17	2 P				
8	11.5	.095	92.0	S.W.	50	2 0	20	9 P	10 P	12 P	T	T
9	26.0	.166	87.0	W.	244	4.0	28	5 P	0 A	4 A	T	T
10	22.0	.168	72.5	N.W.	242	4.5	30	3 A				
11	21.0	.124	93 5	N.	252	6.5	36	8 P	9 A	11:30P	.78	10
12	6 5	078	77.5	W N.W.	204	6.5	36	4 A				
13	6.5	.075	80 5	W.S.W.	147	2 0	20	6 A				
14	7.0	.091	86.5	S.S.W.	63	2.0	20	10 P	5:30 A	6:30 A	T	T
15	23.0	.186	68.0	S.W.	340	5.0	32	3 P				
16	5.5	.084	72.0	W.N.W.	146	2.0	20	2 A				
17	2.0	.070	84.5	S.W.	12	0.0	—	—				
18	23.0	.145	87.5	N	112	1.5	17	12 M	8 P	12 M	.03	½
19	33 0	.220	95 5	S.S W.	131	1.5	17	3 P				
20	20.5	.168	87.0	N.W	198	5.0	32	6 A				
21	14 5	.108	81 5	N.N.W.	29	0 0	—	—	6 A	11:30A	.35	3
22	15.5	.106	85.0	W.N.W.	291	30.0	78	12 M				
23	−8.0	.049	61 5	W.S W.	239	5 0	32	2 P				
24	−12.0	.041	64 5	N. W.	111	3.5	26	5 P				
25	−11 0	.044	62.5	N.	87	0.0	—	—				
26	−10.0	.052	59 5	N.	124	5.0	32	12 M				
27	−0.5	.066	68 5	N.N.W.	152	3.5	26	0 A				
28	20.5	.140	82.5	N.N.E.	201	5.5	33	11 P				
29	23.0	.171	74 0	N.N.E.	403	7 0	38	4 A				
30	13 0	.124	68.0	N N.E.	201	3 0	24	0 A				
31	15.5	.114	85.0	N.N.E.	70	1.0	14	0 A				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was considerably colder than usual and the temperature below freezing nearly the whole period. Only on two days, the 5th and 19th, was the average temperature for the day above the freezing point. On the other hand the mean temperature for the day was below ten degrees on seven days. Nearly all of the precipitation occurred as snow and but little of it melted during the month. The last decade of the month was marked by a very high barometer, large wind movement and generally clear weather.

The records of the several weather elements compared with their respective normals show the following features of interest : The mean barometer was abnormally high and the range of pressure very large. The minimum pressure at midnight on the 11th of 28.92 inches was a very low record for this station.

The mean temperature was nearly five degrees lower than usual and about six degrees lower than the preceding month. The maximum temperature was ten degrees below the normal and the mimimum five degrees below the normal, giving a rather small range.

The mean dew-point was five degrees lower than usual and the relative humidity practically normal.

The total precipitation was less than one half the normal amount and about one half of it occurred as a rather severe snow storm on the 11th.

The total wind movement was about ten per cent more than normal as was rather persistant from the northwest quadrant. There was very little wind from the southerly points of the compass. An unusually heavy gale was registered on the 22d.

The amount of sunshine was large and there were but few cloudy days.

J. E. OSTRANDER, Meteorologist.

G. E. LINDSKOG, Observer.

BULLETIN No. 398. FEBRUARY, 1922

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.29, 21st, 9 A
Minimum reduced to freezing,	29.05, 2nd, 4 P
Reduced maximum reading	30.60, 21st, 9 A
Reduced minimum reading,	29.35, 2nd, 4 P
Mean semi-daily reduced	30.123
Monthly range	1.25

Air Temperature. In Degrees Fahr.

Highest	49.5, 2nd, 4 P
Lowest	—13.5, 18th, 7:30 A
Mean hourly	25.7
Mean of means of max. and min.	25.8
Mean sensible (wet bulb)	23.7
Monthly range	63.0
Highest mean daily	39 3. 2nd
Lowest mean daily	—0.8, 17th
Mean maximum	34.0
Mean minimum	17.6
Mean daily range	16.4
Greatest daily range	43.0 18th
Least daily range	4.5, 22nd

Humidity.

Mean dew point	19.9
Mean force of vapor	.149
Mean relative humidity	80.5

Precipitation. In inches.

Total precipitation, in inches	3.02
Number of days on which .01 inch or more rain fell	11
Total Snow in inches	13½
Days of sleighing	17

Wind.

Total movement	3909 m
Greatest daily movement	357m, 8th
Least daily movement	14m, 22nd, 25th
Mean daily movement	140m
Mean hourly velocity	5.8m

Maximum pressure per square foot, 11.5 lbs = 48m per hour, 6th, 9 P, W.N.W.

Maximum velocity for 5 minutes, 30 m per hour, 6th, 9 P., W.N.W.

Prevailing direction, West.

Summary.

North	11 per cent
South Southwest	18 " "
Southwest	14 " "
West Northwest	18 " "
North Northwest	11 " "
Other directions	28 " "

Weather.

Mean cloudiness observed	54 per cent
Total cloudiness recorded by the Sun Thermometer	149 hours = 50 per cent.
Number of clear days	7
Number of fair days	10
Number of cloudy days	11

Bright Sunshine.

Number hours recorded, 147. = 50 per cent.

Rain, 1st, 2nd, 6th, 11th, 22d, 23rd.

Snow, 2d, 3d, 6th, 9th, 12th, 13th, 15th, 19th, 22d, 27th.

Gales, 40m, 3d, W.N.W.; 48m, 6th, W.N.W. 39m., 13th, W.N.W.; 41m., 16th, N.; 35m., 17th, N.; 45m., 24th, N. W.; 42m., 28th W.N.W.

*Temperature in ground shelter.

**Reduced to freezing and sea-level.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean, Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.36	30.02	30.243	34.5	8 P	9.5	7:30 A	22.0	22.5	21.7	4.6
2	30.02	29.35	29.462	49.5	4 P	32.0	1:30 A	40.7	39.3	39.7	5.1
3	29.66	29.41	29.537	36.0	0 A	28.5	12 P	32.3	32.7	28.7	0.8
4	30.08	29.66	29.939	34.5	3:30 P	24.0	12 P	29.3	28.8	27.0	7.5
5	30.16	29.97	30.082	35.0	3 P	23.0	7 A	29.0	29.5	28.3	6.0
6	29.97	29.56	29.712	38.0	7 P	30.0	5 A	34.0	32.3	31.7	0.0
7	29.86	29.67	29.776	34.0	0 A	24.0	12 P	29.0	31.3	28.0	0.6
8	30.27	29.86	30.176	24.0	0 A	11.5	7:30 A	17.7	16.9	12.3	9.6
9	30.27	30.03	30.111	30.5	8 P	13.5	1:30 A	22.0	23.8	23.7	2.5
10	30.13	30.05	30.115	32.0	4 P	25.5	7:30 A	28 7	28.3	27.7	2.9
11	30.11	29.79	29.894	34.5	8 P	28.5	1 A	31.5	32.1	32.7	0.0
12	30.08	29.91	29.996	34.5	0 A	16.5	12 P	25.5	26.7	24.2	2.6
13	30.36	29.88	30.086	28.0	0:30 P	16.0	2 A	22.0	20.8	18.0	9 3
14	30 59	30.36	30.545	30.0	3:30 P	8.0	7:30 A	19.0	18.8	15.3	9.3
15	30.53	29.92	30.138	25.0	8 P	16.5	4 A	20.7	19.2	20.5	0.0
16	30.17	29.92	30.068	24.0	5 A	1.0	2 P	12.5	15.7	11.3	5.8
17	30.58	30.17	30.486	11.0	4 P	−12 0	7:30 A	−0.5	−0.8	−3.7	9.6
18	30.57	30.31	30.433	29.5	8 P	−13.5	7:30 A	8 0	12.3	10.0	6.4
19	30.18	30.11	30.227	45.0	4 P	28 5	7 A	36.7	34.3	32 5	5.2
20	30.40	30.07	30.235	47.5	1:30 P	32.0	12 P	39.7	38.8	35 0	7.2
21	30.60	30.40	30.552	41.5	4 P	24.0	7 A	32.7	30.3	26.0	9.9
22	30.41	30.18	30.254	30.0	2:30 P	25.5	6 A	27.7	27.7	28.0	0.0
23	30.18	29.67	29.872	39.5	12 P	27.0	0 A	33.3	31.5	32.5	1.5
24	30.42	29.81	30.316	39 5	0 A	15.0	12 P	27.3	25.7	21.0	10.1
25	30.47	30.34	30.422	38.0	4 P	6 5	7:30 A	22.3	19.5	15.5	10.1
26	30.47	30.33	30.414	37.5	4:30 P	10.0	7 A	23.7	23 6	21.7	8.2
27	30.33	30.05	30.118	34.5	4 P	28.5	7 A	31.5	30.8	30.3	4.6
28	30.46	30.10	30.224	34.0	10 A	14.5	12 P	24.3	26 9	23.7	8.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	16.5	.184	79.5	S.	40	1.0	14	11 P	11 P	12 P	.05	
2	36.5	.264	84.0	S.S.W.	196	5.5	33	10 A	0 A	11:00A	.72	½
3	21.0	.185	61.0	W.N.W.	248	8.0	40	4 P	9 A	12 M	T	T
4	24.0	.155	86.5	W.N.W.	311	3.5	26	2 A				
5	25 0	.165	84.0	S.S. W.	70	1.0	14	4 P				
6	27.0	.196	77.0	W.N.W.	105	11.5	48	9 P	6 A	6 P	.18	¼
7	23.5	.167	79.0	N.N.W.	239	6.5	36	6 P				
8	6.5	.087	70.5	W.N.W.	357	5.5	33	9 A				
9	21.0	.137	87.5	S.S.W.	113	0.5	10	1 P	9 P	12 P	.02	¼
10	24.5	.160	86.0	S.W.	23	0.0	—	—				
11	30.5	.192	92.5	S.W.	79	1.5	17	11 P	11 A	5 P	.16	
12	22.0	.138	88 0	N N.W.	117	3.0	24	2 A	9 P	11:30 P	.04	½
13	10.5	.112	65.5	N.W.	169	7.5	39	5 P	9 A	10 A	T	T
14	9 0	.098	70.5	S.W.	72	1.0	14	1 A				
15	18.5	.118	88.0	N.	56	2.5	22	10 P	6 A	5 P	.55	6
16	13.5	.084	72.5	N.	264	8.5	41	4 P				
17	−8 0	.038	82.0	N.N.E.	208	6.0	35	1 A				
18	6.0	.097	80 0	S.S.W.	126	5.0	32	2 P				
19	30.0	.196	86.5	S.S.W.	85	2.5	22	12 P	5 A	1 P	.05	1
20	32 0	.218	85.0	W.	206	3 5	26	7 P				
21	20.5	.156	72 0	W.	102	1.5	17	11 A				
22	26.0	.158	92.0	N.N.E.	14	0.0	—	—*	3 A	11 P	.88	2½
23	31.5	.188	95 5	S.	53	1.0	14	7 P	3 A	10 P	.15	
24	16.0	.124	74 5	N.N.W.	257	10 0	45	4 A				
25	11.5	.100	80.0	N.W.	14	0.0	—	—				
26	16.5	.136	73.5	S. W.	31	0.0	—	—				
27	28.5	.174	92 5	N.	106	0.5	10	3 P	2 A	2 P	.22	2½
28	17.5	.146	69.0	W.N.W.	248	9.0	42	11 A				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was good winter weather with most of the variations and rapid changes which often mark the mid-winter season. Several thaws and snowstorms occurred but only one short period of extremely cold weather when the lowest temperature of the season was reached. A generally high barometer prevailed and some of the storms occurred when the barometer was much higher than normal. There were many gales although the total wind movement was comparatively small. There was sufficient snow to maintain fair sleighing about one-half the month.

The mean barometer was unusually high and there were only three days when the maximum barometer was below 30 inches. The mimimum barometer was considerably above the normal giving a range of pressure considerably less than usual at this time of year. The total wind movement was a thousand miles less than usual, The wind was quite variable although nearly all was from the westerly directions.

The month was slightly warmer than normal and the range of temperature was comparatively large. The period from the 13th to the 19th was the coldest part of the month.

The mean dew-point and relative humidity were both slightly higher than usual.

The total precipitation was slightly below the average and was well distributed throughout the month. A considerable portion of it occurred as snow although there were no very large storms.

The amount of sunshine was about normal although the number of cloudy days was large.

J. E. OSTRANDER, Meteorologist.

G. E. LINDSKOG, Observer.

BULLETIN No. 399. MARCH, 1922

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.31, 1st, 10 A
Minimum reduced to freezing,	29.02, 7th, 7 P
Reduced maximum reading	30.63, 1st, 10 A
Reduced minimum reading,	29.32, 7th, 7 P
Mean semi-daily reduced	30.101
Monthly range	1.31

Air Temperature. In Degrees Fahr.

Highest	72.0, 26th, 4 P
Lowest	7.0, 4th, 7:30 A
Mean hourly	34.5
Mean of means of max. and min.	35.3
Mean sensible (wet bulb)	31.4
Monthly range	65.0
Highest mean daily	52.7, 26th
Lowest mean daily	17.5, 11th
Mean maximum	44.6
Mean minimum	26.0
Mean daily range	18.6
Greatest daily range	39.5 26th
Least daily range	4.0, 20th

Humidity.

Mean dew point	27.1
Mean force of vapor	.209
Mean relative humidity	77.6

Precipitation. In inches.

Total precipitation, in inches	5.34
Number of days on which .01 inch or more rain fell	14
Total Snow in inches	9¾
Days of sleighing	6

Wind.

Total movement	4883 m
Greatest daily movement	351m, 8th
Least daily movement	19m, 4th
Mean daily movement	158m
Mean hourly velocity	6.6m

Maximum pressure per square foot, 20.0 lbs= 63m per hour, 7th, 6 P. S.

Maximum velocity for 5 minutes, 33 m per hour, 7th, 7 P., S.

Prevailing direction, Northwest.

Summary.

Northwest	19 per cent
West Northwest	16 " "
North Northwest	10 " "
West Northwest	18 " "
North Northeast	13 " "
Other directions	42 " "

Weather.

Mean cloudiness observed	49 per cent
Total cloudiness recorded by the Sun Thermometer	193 hours = 52 per cent.
Number of clear days	9
Number of fair days	8
Number of cloudy days	14

Bright Sunshine.

Number hours recorded, 178, = 48 per cent.

Rain, 4th, 5th, 7th, 8th, 19th, 20th, 21st, 27th, 28th, 29th, 30th, 31st.

Snow, 2d, 5th, 8th, 11th, 16th, 21st, 30th, 31st.

Hail, 4th, 31st.

Thunder and Lightning, 29th, 30th.

Gales, 63m, 7th, S.; 48m, 8th, W.N.W.; 37m., 29th, N.W.

*Temperature in ground shelter.

**Reduced to freezing and sea-level.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.63	30.39	30.532	24.0	5:30 P	8.5	7:30 A	16.3	17.5	16.0	8.4
2	30.39	29.95	30.090	29.0	5 P	18.0	7:30 A	23.5	22.6	21.5	6.3
3	30.32	30.05	30.250	46 0	5 P	9 0	7 A	27.5	25 8	20 7	10.6
4	30.37	29.78	30.168	33.0	8 P	7.0	7:30 A	20.0	22.3	22 0	4.0
5	30.05	29.55	29 738	42.5	5 P	31 0	2 P	36.7	34.5	35.0	4.4
6	30.22	30.05	30.174	54.0	3:30 P	25.5	7 A	39.7	38.8	32.7	10.2
7	30.09	29.32	29.696	55.0	7 P	34 0	12 P	44.5	40.7	41.3	0.0
8	30.24	29.50	29.934	34.0	8 A	26.5	12 P	30.3	31.0	28.5	0.0
9	30.43	30.17	30.312	46.5	5 P	20.5	7 A	33.5	32 0	30.7	0.0
10	30.17	29.85	30.014	40.0	3 P	26.5	7:30 A	33.3	33 5	32.3	0.0
11	29.95	29 71	29.822	40.5	5 P	31.0	7 A	35.7	35.0	33.0	0.0
12	30 47	29.95	30.344	49.5	3 P	30.0	12 P	39.7	38.3	33.5	11.0
13	30.54	30.15	30.387	51.0	3:30 P	23.0	7 A	37.0	35.4	30 7	2.3
14	30.15	29.86	29.932	58.5	3 P	34.0	1 A	46.3	43.5	40 0	5.8
15	29.98	29.84	29.922	53.0	4 P	33 5	6 A	43.3	40 2	36.3	7.4
16	30.07	29.89	30.002	41.5	2:30	24 0	12 P	32.7	31.7	27.7	9.5
17	30.26	30.06	30.194	30.0	4:30	17 5	9 A	23.7	21 3	18.5	8.8
18	30.28	30.14	30.216	35.0	4	15.0	7 A	25 0	23.4	20.5	11.2
19	30.16	29 90	30.032	50.0	4:30 P	16 0	6:30 A	33.0	31 7	30.3	11.0
20	29 90	29.44	29.558	36.0	5 P	32.0	6 A	34.0	33.3	33.5	0.0
21	29.75	29 47	29.630	38.5	4 P	34 0	3 A	36.3	35 4	33.3	0 0
22	30.13	29.75	30.006	39 0	4 P	32.0	5 A	35.5	33.7	30.5	8.0
23	30.25	30.13	30.226	44.0	5 P	25.5	7 A	34.7	35.0	29.3	11.6
24	30.31	30.18	30.243	56.0	3 P	27.0	6 A	41.5	40.2	33.0	10.3
25	30.46	30.31	30.412	55 0	5 P	27 5	6:30 A	41.3	42.2	35.7	8.8
26	30.35	30.09	30.228	72 0	4 P	32.5	7 A	52.3	52 7	42.3	9.3
27	30.36	30.17	30.297	55.0	0 A	41.5	12 P	48.3	45.7	42.5	0.9
28	30.17	29 84	29.960	49 0	12 P	39.0	7 A	44.0	42 5	41.7	0.2
29	30.40	29.81	30.141	56.0	8 A	32.0	12 P	44.0	47.7	40.5	11.5
30	30 56	30.29	30.486	35.5	2:30 P	24.0	7 A	29.7	30 4	28.5	2.6
31	30.29	30.00	30.194	35.0	2 P	29.0	0 A	32.0	32.3	30.5	4.3

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	11 0	.100	75.0	W.	122	5.0	32	3 A				
2	18.5	.124	83.5	W.N.W.	73	1.0	14	1 A	1 A	10:00 A	.40	4½
3	14.0	.128	68.5	N.N.W.	48	0.0	—					
4	20.0	.132	92.0	N.N.E.	19	1.0	14	10 P	4 P	12 P	.27	
5	31.0	.226	77.5	N.N.W.	200	3.5	26	5 P	0 A	2:30 P	.45	T
6	27.0	.218	70.0	S.	89	3.0	24	9 P				
7	41.0	.263	96.0	S.	217	20.0	63	6 P	6 A	12 P	.93	
8	22.5	.178	67.5	W.N.W.	351	11.5	48	12 M	0 A	12 M	.03	T
9	29.5	.181	90.0	W.N.W.	78	0.5	10	2 P				
10	30.0	.194	85.5	S.S.W.	100	1.0	14	3 P				
11	29.5	.204	82 0	N N.E.	143	1.0	14	3 P	9 A	4 P	T	T
12	26.0	.228	62.0	N.	203	3.0	24	11 A				
13	25.0	.198	71.5	S.S.W.	162	5.5	33	4 P				
14	37.0	.271	83.0	W.N.W.	249	4.5	30	3 P				
15	32.5	.238	78.0	N.W.	110	4.0	28	10 P				
16	21.0	.174	67.0	N.W	242	5.0	32	5 P	9 A	4:30 P	.02	¼
17	13.0	.112	72.0	N.N.W.	337	5.0	32	4 P				
18	13.0	.126	66 5	N.W.	315	5.0	32	3 P				
19	24.5	.174	72.0	W S.W.	82	1.0	14	11 P	11:30 P	12 P	.04	
20	32 0	.195	95.0	N.N.E.	132	1.0	14	5 P	0 A	12 P	1.31	
21	30 0	.206	81 5	S.W.	185	2.5	22	4 P	0 A	3 P	.07	T
22	28.0	.186	75 5	N.W.	214	2.5	22	5 P				
23	24.0	.178	72 5	N.W.	218	3.0	24	11 A				
24	26.5	.221	65 0	W.	73	1.5	17	3 P				
25	27.5	.255	59.0	W N.W.	89	1.0	14	6 P				
26	35 5	.357	62.5	S. W.	165	3.0	24	6 P				
27	42.0	.277	96 0	N.N.E.	85	0.0	—		6 A	12 P	.20	
28	41.0	.271	96 0	N.E.	30	0.0	—		0 A	12 P	.42	
29	33.0	.328	60.0	N.	291	7.0	37	10 A	0 A	5 A	.02	
30	26.5	.161	92.5	N.W.	158	2.0	20	3 A	10 A	12 P	.50	4½
31	28.5	.176	90.0	N. E.	94	2.0	20	10 P	0 A	12 P	.68	T

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was seasonal and the transition from Winter to Spring fairly completed. The snow disappeared early in the month and the frost gradually left the ground so that in places it was entirely out of the ground when the month closed. The last third of the month was like early April weather. A fairly heavy snowfall occurred on the 30th so that the ground was covered with snow when the month closed.

The records of the several weather elements show the following features of interest: The mean barometer was rather high and the range of pressure practically normal. The rapid fall in pressure on the 7th with a rather severe wind and rain storm was followed by an equally rapid rise in pressure the next day, so that normal conditions were quickly restored. The maximum and minimum pressures were practically normal. The total wind movement was about ten per cent less than usual and only a few gales were recorded.

The mean temperature was practically normal but the maximum temperature was about ten degrees higher than usual giving a very large range for the month. The minimum temperature was about the average value and came very early in the month.

The mean dew-point and the relative humidity were both slightly higher than usual.

The total precipitation was about thirty per cent more than usual, due to several rather heavy storms. A moderate thunder-storm occurred on the night of the 29th and early morning of the 30th. A rather heavy rain was in progress and was just turning into a snowstorm as the month closed.

The sunshine record was nearly normal.

J. E. OSTRANDER, Meteorologist.

G. E. LINDSKOG, Observer.

AMHERST, MASS.

BULLETIN No. 400. APRIL, 1922

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.12, 6th, 9 A
Minimum reduced to freezing,	29.09, 11th, 6 P
Reduced maximum reading	30.43, 6th, 9 A
Reduced minimum reading,	29.38, 11th, 6 P
Mean semi-daily reduced	30.042
Monthly range	1.05

Air Temperature. In Degrees Fahr.

Highest	81.5, 10th,; 330 P
Lowest	24.5, 22nd, 6 A
Mean hourly	45.7
Mean of means of max. and min.	45.8
Mean sensible (wet bulb)	41.1
Monthly range	57.0
Highest mean daily	60.7, 10th
Lowest mean daily	32.3, 1st
Mean maximum	57.2
Mean minimum	34.4
Mean daily range	22.8
Greatest daily range	43.5 10th
Least daily range	4.5, 7th

Humidity.

Mean dew point	35.7
Mean force of vapor	.306
Mean relative humidity	73.2

Precipitation. In inches.

Total precipitation, in inches	2.81
Number of days on which .01 inch or more rain fell	11
Total Snow in inches	2¾
Days of sleighing	2

Wind.

Total movement	5661 m
Greatest daily movement	350m, 27th
Least daily movement	21m, 4th
Mean daily movement	189m
Mean hourly velocity	7.9m

Maximum pressure per square foot, 14.0 lbs = 53m per hour, 20th, 3 P, W.N.W.

Maximum velocity for 5 minutes, 36 m per hour, 20th, 3 P., W.N.W.

Prevailing direction, Northwest.

Summary.

North	17 per cent
South Southwest	13 " "
West Northwest	27 " "
Northwest	17 " "
Other directions	28 " "

Weather.

Mean cloudiness observed	40 per cent
Total cloudiness recorded by the Sun Thermometer	174 hours = 43 per cent.
Number of clear days	15
Number of fair days	5
Number of cloudy days	10

Bright Sunshine.

Number hours recorded, 228, = 57 per cent.

Rain, 1st, 2d, 4th, 7th, 8th. 11th, 15th, 17th, 18th, 19th, 20th, 23d, 27th.

Snow, 1st, 2d, 20th, 23d.

Hail,

Frosts,—after the 15th—16th, 21st, 22d, 23d, 24th, 25th, 29th.

Thunder and Lightning, 11th.

Gales, 36m, 17th, S.SW.; 45m, 18th, W.; 53m, 20th, W.N.W.; 40m, 21st, W.N.W.: 35m, 24th, N.N.E.; 45m, 27th, W.N.W.: 39m, 28th, N.W.: 36m, 29th, W. N. W.: 35m, 30th, N.N.W.

*Temperature in ground shelter.

**Reduced to freezing and sea-level.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean, Semi-daily	Maximum.	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.00	29.74	29.800	37.0	2 P	30.0	3 A	33.5	32.3	30.7	5.2
2	30.21	29.87	30.076	44.0	3:30 P	27 5	6 A	35.7	36.0	31.0	11.1
3	30.28	30.17	30.274	54.0	4 P	31.0	6:30 A	42.5	41.5	35.5	2.4
4	30.26	30.16	30.254	45.0	2 P	30.0	5 A	37.5	37.6	35.0	0.0
5	30.39	30.27	30.364	54.5	5 P	31.0	6:30 A	42.7	42.9	37.0	10.4
6	30.43	30.27	30.356	62.0	5 P	26.5	6:30 A	44.3	45.7	51.3	11.8
7	30.27	29.90	30.146	44.0	12 P	39.5	5 A	41.7	42.3	39.7	0.0
8	29.97	29.83	29.898	66.5	5 P	44 0	0A	55 3	56.0	54.5	0.0
9	30.10	29.80	29.955	61.0	4:30 P	39 5	6A	50.3	50.0	44.5	4.0
10	29.83	29.64	29 760	81.5	3:30 P	38.0	6:30 A	59.7	60.7	50.5	10.8
11	29.81	29.38	29.510	77.5	2 P	52.0	7 A	64.7	59.3	51.0	7.6
12	29.73	29.42	29.582	57.0	11 A	43.5	6:30 A	50.3	47.3	45 5	3.6
13	29 85	29.73	29.804	56.0	5 P	40.0	5 A	48.0	45.9	42.0	8.4
14	29.86	29.75	29.823	63.5	4 P	34.0	6:30 A	48.7	48.4	43.3	11.6
15	30.02	29.64	29.792	46.0	1 A	38.0	12 P	42 0	41.0	40 0	0.7
16	30.27	30.02	30.240	66.5	5 P	32.0	6 A	49.3	48.7	43.3	12.8
17	30 26	29.89	30.073	54.0	12 P	40.0	5:30 A	47.0	48.1	46.5	0.2
18	30.23	29.71	29.844	63.0	1 P	41.5	12 P	52.3	53.4	49.7	2.9
19	30.37	30.08	30.242	47.5	3 P	37.5	12 P	42.5	42.8	40.3	0 0
20	30.08	29.84	29.956	44.5	11 A	31.0	12 P	37.7	36 9	33.3	6.0
21	30.21	30.01	30.134	46.0	5 P	28.0	5 A	37.0	34.9	30.5	11.5
22	30.27	30.19	30.253	51 5	4:30 P	24.5	6 A	38 0	38.5	33.5	11.9
23	30.34	30.22	30.284	48.0	12 M	27.5	6 A	37.7	37.2	35 7	9.0
24	30.41	30.33	30.386	58.0	5 P	29.0	6 A	43.5	43.2	39.5	12.9
25	30.37	30.00	30.170	70.5	3 P	29 0	6 A	43 7	51.4	42.3	13.0
26	30.00	29 77	29.876	74.5	5 P	40.0	6 A	57.3	59 5	49.7	11.3
27	30.05	29.75	29.922	59 5	0 A	33.5	12 P	46 5	49.0	40.3	11.6
28	30.18	30.00	30.072	55.5	4 P	31.0	6 A	43 3	42.1	35 0	12.9
29	30.19	29.99	30.107	66.0	3:30 P	28.5	6 A	47.3	49.8	42 0	11.8
30	30 36	30.12	30.314	62 0	5 P	34.0	6 A	48.0	48 6	40.3	12.8

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	28.5	.180	87.5	N.	247	2.5	22	12 M	0 A	12 P	1.15	2½
2	24.5	.198	69.5	N.N.W.	226	4.0	28	8A	0 A	5 A	.01	¼
3	29.5	.240	67.5	N.	140	1.5	17	A				
4	32 0	.218	82.0	N.	21	0.0	—		3 P	5 P	T	
5	30.0	.257	67.5	W.N. W.	75	0.0	—					
6	38.5	.302	82.5	S.S.W.	63	0.5	10	10 P				
7	37.5	.259	88.0	S.S. W.	236	2.5	22	12 M	5 A	12 P	.03	
8	53 0	.457	88.5	WS.W.	164	3 0	24	1 A	0 A	10 A	.22	
9	41.0	329	80.5	N.	63	0.5	10	8 P				
10	45.5	.528	68.5	W.	87	1.5	17	4 P				
11	49.5	.404	88.0	N.E.	143	5.5	33	8 P	5:30 P	12 P	.29	
12	43.0	.334	83.0	N.W	184	3.5	26	1 P				
13	38.0	.302	76.5	W.N.W.*	299	5.0	32	12 M				
14	36.0	.352	62 5	N.	180	2.0	20	2 P	*			
15	38.0	.257	92.0	N.N.E.	113	0.5	10	7 A	2 A	4:30 P	.69	
16	37.5	.326	70.0	W N.W.	67	.05	10	5 P				
17	44.0	.342	87.5	S.S W.	301	6.5	36	6 P	2 P	12 P	.30	
18	46.5	.395	83.0	S W.	345	10.0	45	8 P	0 A	3 A	.01	
19	37.0	.275	80 5	S.S.W.	224	1.5	17	11 A	8 P	12 P	.02	
20	29.5	.207	81.0	W.N.W	248	14.0	53	3 P	0 A	6 P	.05	T
21	24.5	.196	67 5	W.N.W	417	8.0	40	2 A				
22	24.0	.236	55.5	N.W.	135	2.0	20	10 A				
23	29.5	.242	70 0	N.N.W.	100	4.0	28	1 P	12 M	3 P	.04	T
24	31.0	.300	60 0	N.N.E.	203	6.0	35	11 A				
25	32.5	.368	52.5	N.W.	166	5.5	33	12 M				
26	42.5	.481	58.5	W.N.W.	120	2.0	20	5 P				
27	36.5	.282	77.5	W.N.W.	350	10.0	45	1 P	7 A	8:30A	T	
28	23.5	.264	48.5	N. W.	309	7.5	39	2 P				
29	34 5	.340	60 0	W N.W.	235	6.5	36	12 M				
30	32.5	.309	59.5	N. W.	200	6.0	35	11 A				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The season's progress which was well started in March, was arrested for about a week by the heavy storm of rain and snow which occurred on April 1st. The last third of the month while practically free from precipitation was rather cold and several frosts were noted. The lowest temperature of the month was on the 22nd when the ground was frozen and ice formed on shallow water. At the close of the month the season was slightly backward compared with normal conditions. The wind was largely from the northwest quadrant and there were many gales the last half of the month.

The records of the several weather elements show the followiug features: The mean barometer was rather high and the range of pressure nearly normal. The most marked period of low pressure was immediately following the high temperature on the 10th, 11th.

The mean hourly temperature was slightly lower than the normal for April and the range was rather small. The minimum was 3° higher than the normal for this feature but came much later in the month than usual. The maximum was about two degrees higher than the normal and occurred quite early in the month.

The mean dew point was practically normal and the relative humidity about five points above normal.

The total precipitation was slightly less than usual and most of it occured before the middle of the month.

The total wind movement was rather large due to several large daily movements.

The sunshine record was nearly normal.

J. E. OSTRANDER, Meteorologist.

G. E. LINDSKOG, Observer.

BULLETIN No. 401. MAY, 1922

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.18, 1st, 8 A
Minimum reduced to freezing,	29.24, 19th, 9 A
Reduced maximum reading	30.48, 1st, 8 A
Reduced minimum reading,	29.53, 19th, 9 A
Mean semi-daily reduced	30.016
Monthly range	0.95

Air Temperature. In Degrees Fahr.

Highest	87.5, 30th, 4 P
Lowest	28.0, 1st, 6 A
Mean hourly	59.8
Mean of means of max. and min.	60.0
Mean sensible (wet bulb)	53.8
Monthly range	59.5
Highest mean daily	69.2. 30th
Lowest mean daily	44.9. 5th
Mean maximum	74.5
Mean minimum	45.5
Mean daily range	29.0
Greatest daily range	42.0, 1st
Least daily range	7.0, 5th

Humidity.

Mean dew point	49.4
Mean force of vapor	.512
Mean relative humidity	72.2

Precipitation. In inches.

Total precipitation, in inches	5.47
Number of days on which .01 inch or more rain fell	6

*Temperature in ground shelter.

**Reduced to freezing and sea-level.

Wind.

Total movement	4516 m
Greatest daily movement	398m, 8th
Least daily movement	62m, 6th
Mean daily movement	146m
Mean hourly velocity	6.1m

Maximum pressure per square foot, 11.0 lbs= 47m per hour, 7th, 5 P, W.S.W.

Maximum velocity for 5 minutes, 27 m per hour, 8th, 2 P., N.W.

Prevailing direction, West Northwest.

Summary.

South Southwest	19 per cent
North Northwest	16 " "
West Southwest	13 " "
North Northeast	10 " "
Northwest	10 " "
Other directions	34 " "

Weather.

Mean cloudiness observed	34 per cent
Total cloudiness recorded by the Sun Thermometer	119 hours = 26 per cent.
Number of clear days	19
Number of fair days	9
Number of cloudy days	3

Bright Sunshine.

Number hours recorded, 334, = 74 per cent.

Rain, 4th, 5th, 7th. 13th, 18th, 19th, 25th, 26th.

Frosts, 1st, 12th.

Hail, 19th

Thunder and Lightning, 7th, 19th.

Gales, 47m, 7th, W.S.W.: 46m, 8th, N.W.: 37m, 11th, N.W.: 44m, 19th, S.S.W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean, Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper	Mean Sensible Wet Bulb.	
1	30.48	30.27	30.406	70.0	3:30 P	28.0	6 A	49.0	51.4	43.7	13.1
2	30.36	30.08	30.193	78.5	3:30 P	40 5	6 A	59.5	60.9	50.3	12.5
3	30.12	29.97	30.054	82.0	2 P	46.5	6 A	64.3	65.6	56.3	10.7
4	30.12	29.99	30.082	62.0	0 A	43 0	12 P	52.5	49.2	45.7	0.0
5	30.01	29.74	29.840	49 0	4 P	42.0	4 A	45.5	44.9	43.3	0.0
6	29.83	29.72	29.786	74.0	4 P	42.0	6 A	58.0	56.0	53.5	11.8
7	29.78	29.60	29.725	75.0	3 P	49.5	4:30 A	62.3	58.5	54.5	6.2
8	30.05	29.78	29.942	68 5	4 P	49 0	6A	58.7	57.7	50.3	12.3
9	30 22	30 05	30.158	74.0	5 P	42 5	2:30 A	58.3	58.6	52.0	12.7
10	30.11	29.86	29.990	80.0	4 P	50.0	6 A	65.0	63 8	52.3	10.7
11	29 90	29.62	29.766	73 5	12:30 P	44.0	5 A	58.7	59.8	57.3	13.5
12	29.83	29.73	29.829	67 5	4 P	32.5	6 A	50.0	52 0	47.5	12.0
13	29 97	29.82	29.866	69.0	3:30 P	39.0	6 A	54.0	55.8	51.3	10.1
14	30.01	29.91	29.974	77.5	5:30 P	41.0	6 A	59.3	59 0	54.3	13.6
15	29.94	29.78	29.870	81.5	2 P	42.0	6 A	61.7	62.0	53 5	11.7
16	30 13	29.88	30.098	78.5	3:30 P	41.0	6 A	59.7	59.4	49.3	13.4
17	30.19	30.05	30.147	72.5	2 P	42.5	6 A	57.5	56.7	48.0	12.0
18	30 05	29.64	29 827	64.5	10:30 P	50.0	7 A	57.3	56.1	55.0	3.0
19	29.84	29 53	29 674	70.0	5 P	52 0	9 P	61.0	60 5	55.7	7.6
20	29.92	29.83	29.878	76.5	2 P	50.0	5:30 A	63 3	63 3	59.7	11.0
21	30.04	29.92	29.992	76.0	4:30 P	51.0	6 A	63.5	64.3	62.5	11.9
22	30.11	30.04	30.085	81.5	5 P	55.0	3 A	68 3	67.0	61.5	13.4
23	30.22	30.11	30.186	80.5	6 P	51.0	6 A	65.7	64.8	57 7	14.1
24	30.31	30.22	30.271	82.0	5 P	43.5	6 A	62.7	63.8	58.3	13.6
25	30.24	29.92	30.050	70.0	1 P	53.0	5:30 A	61.5	60 9	58.7	6.7
26	30.06	29.88	29.925	83.0	3:30 P	55.0	6 A	69.0	66.7	58.5	10.7
27	30 30	30.06	30.244	63.0	6:30 P	46 0	12 P	54 5	54.2	47.5	10.9
28	30.30	30.11	30.206	78.5	5 P	38.0	5:30 A	58 3	58.5	48.7	13.5
29	30.11	30 01	30.064	82.5	3 P	47.0	5:30 A	64.7	66.4	57.7	14.0
30	30 22	30.09	30.161	87 5	4 P	49.0	5 A	68.3	69 2	63.3	13.6
31	30.25	30.15	30.218	79.5	3 P	54.0	5:30 A	66.7	67 4	60.3	14.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	38.5	.345	69.5	WS.W.	111	2.0	20	4 P				
2	39.0	.552	51.0	W.N.W.	173	4.5	30	2 P				
3	51.5	.563	68.0	S.S.W.	158	3.0	24	7 P				
4	45.0	.314	94.5	N.N.E.	179	1.5	17	4 P	3:30 A	12 P	.98	
5	41.5	.297	88.5	N.N.W.	220	2.5	22	12 M	0 A	10 P	1.45	
6	51.0	.457	84.0	W.N.W.	62	0.0	—					
7	52.5	.470	86.0	W.S.W	218	11.0	47	5 P	6 A	12.M	.18	
8	42 0	.488	57.0	N.W	398	10 5	46	2 P				
9	46.0	.490	64.0	N.N.W.	187	4.5	30	2 P				
10	46.0	.516	62.0	N.N.W.	113	3.0	24	5 P				
11	53.5	.555	76.0	N.	226	7.0	37	3 P				
12	40.5	.416	61.5	N.N.E.	118	1.5	17	3 P				
13	46.0	.472	66 0	N.N.E.	83	1.0	14	12 M	4:30 P	5 P	T	
14	51.0	.498	77.5	N.	83	0 5	10	8 P				
15	46.0	.370	61.0	N.N.W.	66	0.5	10	4 P				
16	41.0	.469	56.5	S.S.W.	124	4.5	30	7 P				
17	41.5	.422	62.0	S.	146	1.5	17	4 P				
18	54.0	.455	93.5	N.E.	140	1.5	17	10 P	3:30 A	12 P	1.90	
19	54.5	.477	90 0	S.S W.	316	9.5	44	7 P	0 A	10:30 P	.85	
20	56.5	.608	76.0	S.S.W.	193	4.5	30	1 P				
21	61.0	.614	87.5	W.S.W.	83	1.5	17	2 P				
22	56.5	.719	63.5	N.W.	76	0.5	10	11 A				
23	52.5	.627	63 5	N.N.W.	110	0.5	10	3 P				
24	53.0	.632	65 0	W.S.W.	65	2.5	22	11 P				
25	56.5	.541	86.0	S.S.W.	134	1.0	14	9 P	11 A	10 P	.11	
26	54.5	.594	74 5	W.	90	1.5	17	2 P	8 P	9 P	T	
27	43.5	.376	76.0	E.N.E	122	1.0	14	7 A				
28	51.0	.489	79.0	S.W.	82	0 5	10	7 P				
29	50.5	.683	54.5	N.W.	147	2.5	22	2 P				
30	59.5	.722	71 0	S.E.	77	1.5	17	3 P				
31	56.5	.632	72.5	S.S.W.	216	5.0	32	4 P				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was generally seasonable and pleasant. A slight gain was made in the season's progress so that at the close of the month the season was about one week behind the normal. Only two frosts were recorded, both before the middle of the month, and the last one was very light. The precipitation was heavy, but practically all of it occurred in two well defined storms. There were only three cloudy days, and the amount of sunshine recorded was unusually large. About sixty per cent of the days were clear.

The records of the several weather elements compared with their respective normals show the following features: The mean barometer was high and the range more than usual for this time of year. Fluctuations of pressure were generally slow and small. The total wind movement was slightly less than the normal, although there were several gales. The direction of the wind was more variable than usual. The mean hourly temperature was more than two degrees higher than the normal and the minimum temperature, while rather low, came so early in the month that it was not noticeable. In general, the daily temperature increased gradually as the month progressed.

The mean dew point and relative humidity were both rather high.

The total precipitation was about 50 per cent more than the normal and nearly all of it occurred during two storms of nearly equal duration and intensity. These storms were about two weeks apart and afforded ample moisture up to the close of the month.

The last frost was recorded on the 12th, which is slightly earlier than the average date.

J. E. OSTRANDER, Meteorologist.

G. E. LINDSKOG, Observer.

AMHERST, MASS.

BULLETIN No. 402. JUNE, 1922

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	29 92, 1st, 0 A
Minimum reduced to freezing,	29.12, 11th, 2 P
Reduced maximum reading	30.21 1st, 0 A
Reduced minimum reading,	29.40, 11th, 2 P
Mean semi-daily reduced	29.963
Monthly range	0.81

Air Temperature. In Degrees Fahr.

Highest	90.0, 9th, 1:30 P
Lowest	43.0, 13th, 6 A
Mean hourly	66 5
Mean of means of max. and min.	67.4
Mean sensible (wet bulb)	63.2
Monthly range	47.0
Highest mean daily	75.5 9th
Lowest mean daily	59.4, 19th
Mean maximum	77.4
Mean minimum	75 4
Mean daily range	20.0
Greatest daily range	34.0, 5th
Least daily range	5.0, 21st

Humidity.

Mean dew point	61.4
Mean force of vapor	.646
Mean relative humidity	85.9

Precipitation. In inches.

Total precipitation, in inches	9.68
Number of days on which .01 inch or more rain fell	17

Wind.

Total movement	3527 m
Greatest daily movement	350m, 12th
Least daily movement	39m, 30th
Mean daily movement	118m
Mean hourly velocity	4.9m

Maximum pressure per square foot, 15.5 lbs = 56m per hour, 12th, 1 P, W.N.W.

Maximum velocity for 5 minutes, 42 m per hour, 12th, 2 P., W.N.W.

Prevailing direction, Southwest.

Summary.

South Southwest	33 per cent
Southwest	13 " "
West Northwest	13 " "
South	10 " "
Other directions	31 " "

Weather.

Mean cloudiness observed	56 per cent
Total cloudiness recorded by the Sun Thermometer	191 hours = 42 per cent.
Number of clear days	10
Number of fair days	13
Number of cloudy days	7

Bright Sunshine.

Number hours recorded, 266, = 58 per cent.

Rain, 2d, 3d, 4th, 5th, 6th, 10th, 11th, 15th, 17th, 18th, 19th, 20th, 21st, 22d, 23d, 25th, 27th, 28th, 29th.

Thunder and Lightning, 9th, 11th, 15th 25th, 28th, 29th.

Gales. 41m, 11th, S: 56m, 12th, W.N.W.

*Temperature in ground shelter.

**Reduced to freezing and sea-level.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.21	30.10	30.155	79 5	4 P	58.0	5 A	68.7	66.1	62 5	9.5
2	30.18	30.02	30.120	76.0	2:30 P	62.5	3 A	69.3	67.5	63.7	8.0
3	30.02	29.79	29.859	77.5	1 P	62.5	5:30 A	70.0	67.8	65.7	6.9
4	30.11	29.81	30.020	80.0	4 P	58.0	12 P	69.0	69.8	64.7	13.0
5	30.20	30.10	30.160	85.5	2:30 P	51.5	5 A	68.5	69.3	65.7	11.6
6	30.13	30.04	30.095	78.5	3 P	63.0	6:30 A	70.7	70.3	69.0	11.6
7	30.09	29.95	30.022	88.0	4 P	63.0	6 A	75.5	74.3	68.5	13.2
8	29.97	29.84	29.906	88.5	3:30 P	58 5	6 A	73 5	75.3	72.3	13.8
9	29 86	29.76	29.814	90.0	1:30 P	63 0	5:30 A	76.5	75.5	73.0	12.3
10	29.83	29.77	29.798	69.0	0 A	57.5	12 P	63.3	64 3	63.3	3.7
11	29.80	29.40	29.514	80.0	1:30 P	56.5	5 A	68.3	65.3	64.5	5.2
12	29.73	29.43	29.579	71.0	2 P	53.5	12 P	62.3	63 0	54.0	13.3
13	30 06	29 73	29.958	70.5	5 P	43.0	6 A	56.7	57.1	50.0	13.7
14	30.07	30.01	30.053	73.0	5 P	44.0	6 A	58.5	60.6	57.5	12.5
15	30.12	29.97	30.061	76.5	2:30 P	54.0	5 A	65.3	62.1	58.5	6.8
16	30.17	30.06	30.132	77.0	4 P	55.5	4:30 A	66 3	63.6	59.7	10.0
17	30 08	29.89	29.984	69.0	6 P	59.0	4:30 A	64.0	63.6	62.7	0.0
18	29 98	29.88	29.934	69.0	5 P	58.0	12 P	63.5	64.0	62.5	0.0
19	30.04	29.98	30.028	65.5	7 P	55 5	5 A	60.5	59 4	58.7	1.7
20	30.09	30.00	30.068	71.5	3:30 P	57.0	6 A	64.3	62 8	63.0	3.7
21	30.00	29.73	29.853	65.0	0 A	60 0	12 P	62.5	61.8	62.0	0.5
22	29.76	29.64	29.704	76.5	0:30 P	59.0	6 A	67.7	66.0	63.5	13.0
23	30.04	29.76	29 934	75 5	4 P	59.0	5 A	67 3	65.6	62 5	9.6
24	30.15	30.02	30.098	85.5	3:30 P	54.5	6 A	70.0	69.3	65.5	13.1
25	30.06	29.93	30.022	80.5	5:30 P	63 0	7:30 A	71.7	68 5	62.0	7 9
26	30.13	30.06	30.112	76.5	3 P	52.0	5 A	64.3	64 2	59.3	11.8
27	30.14	30.03	30.090	74.5	2:30 P	54.0	4:30 A	64 3	62.8	59 0	8.6
28	30.03	29 93	29.959	85 5	2:30 P	60.0	4 A	72.7	70.3	68.3	10.2
29	29.97	29.81	29.872	81 0	2:30 P	67.5	10 A	74.3	71.5	68.7	7.0
30	30 01	29.93	30.000	87 5	4:30 P	60.0	5:30 A	73.7	72 6	66.7	14.0
31											

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	61.0	.599	91.0	S.S.W.	177	3.5	26	4:30 P	2 A	12 P	.11	
2	62.0	.652	86.0	S.	87	0.0	—		0 A	12 P	1.06	
3	65.0	.666	94.0	S.S.W.	180	3.5	26	4:30 P	0 A	2 A	.02	
4	62.0	.710	78.5	W.N.W.	126	2.0	20	3 P	7 P	12 P	.02	
5	64.0	.704	86.0	S.S.W.	72	1.5	17	8 P	0 A	5:30 A	.10	
6	68.0	.757	91 0	S.S W.	188	2.5	22	12 M				
7	66 0	.814	79.0	W N.W.	64	0.0	—					
8	70 5	.902	82.5	W.	81	1 5	17	2 P				
9	72.0	864	91.0	W.N.W.	79	1.0	14	2 P				
10	62.0	.619	92.0	E.	63	1.0	14	1 P	8 A	12 P	.32	
11	64.0	.635	93.5	S.W.	133	8.5	41	10 A	0 A	5 P	1.74	
12	48.5	.527	66.5	W.N.W.	350	15.5	56	1 P				
13	43.5	462	62.5	N.W.	112	2.0	20	12 M				
14	54.5	.466	7 55	S.S.E.	86	0 5	10	11 A				
15	58.0	.514	93 0	S E.	92	0.0	—		7 A	11 A	.09	
16	58.0	.570	84 5	S.S W.	56	2.0	20	10 P				
17	61.5	.604	91.0	S.S.W.	208	3 5	26	5 P	9 A	12 P	.06	
18	61.5	.581	96.0	S.W.	191	4 0	28	3 A	0 A	12 P	.78	
19	58.0	.508	96 0	N.N.E.	132	0.0	—		0 A	12 P	.10	
20	63 0	588	97.5	N.	64	0.0	—		0 A	12 P	.34	
21	61.5	.564	97 0	N.N E.	69	0.5	10	9 A	0 A	12 P	1.83	
22	62.5	.630	90.0	S W.	119	1.0	14	3 P	0 A	3 A	T*	
23	60.5	.630	84 5	S.S.W.	80	0.5	10	12 M	7 A	4:30 P	.12	
24	64 0	.700	87.0	S	82	2.0	20	7 P				
25	59 0	.662	78.0	S.S W.	198	5.0	32	3 A	5 A	9:30 A	2.20	
26	55.5	.604	74 5	N.	113	1.0	14	9 A				
27	57.5	.542	86.5	S S.W.	73	1.0	14	6 P	7 P	8 P	T	
28	67.0	.748	89.5	S.S W.	91	2 0	20	6 P	3:30 P	8 P	.06	
29	67.5	.758	89 5	S.	122	1.0	14	5 P	7:30 A	6 P	.73	
30	63.0	.813	72.5	S.W.	39	0.0	—					
31												

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The outstanding feature of the weather during the month was the exceedingly large precipitation. Starting early in the month more than an inch was recorded on the 2nd, about 1¾ inches on the 11th, a still larger amount on the 21st and finally nearly 2¼ inches on the 25th. The last mentioned storm was one of the most severe that has occurred here since the writer has been connected with the station—a period of twenty-five years. Starting a little before midnight of the day before the thunder and lightning was almost incessant for considerable periods up to the time the storm ceased. At about 5 A. M. standard time the rain began and continued until 9-30 A. M. During the heaviest part of the downpour $1\frac{1}{10}$ inches fell in a single hour, and about .7 inches in a period of 15 minutes. Besides the storms mentioned there were several others of consider amount. The total of the rainfall was practically three times the normal, and greatest amount for June since 1862,—a period of 60 years. With the exception of July, 1897, the total was the largest for any month since this station was established, in 1889. As a sequence of the large precipitation the relative humidity was nearly 14 points higher than the normal.

The mean barometer was practically normal and the range of pressure slightly more than usual.

The mean temperature was practically normal and the maximum slightly lower than usual. The minimum temperature was rather high giving a comparatively small range for the month.

The total wind movement was practically normal but the large amount from the southwest quadrant was very unusual. The amount of sunshine was nearly normal notwithstanding the precipitation record

J. E. OSTRANDER, Meteorologist.

G. E. LINDSKOG, Observer.

BULLETIN No. 403. JULY, 1922

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	29.94,	26th, 8 A
Minimum reduced to freezing,	29.38	23rd, 8 P
Reduced maximum reading	30.23	26th, 8 A
Reduced minimum reading,	29.67,	23rd, 8 P
Mean semi-daily reduced	30 016	
Monthly range	0.56	

Air Temperature. In Degrees Fahr.

Highest	94.0,	12th, 4 P
Lowest	49.0,	30th, 5:30 A
Mean hourly	69.4	
Mean of means of max. and min.	70.8	
Mean sensible (wet bulb)	64.5	
Monthly range	45.0	
Highest mean daily	76.2,	2nd, 18th
Lowest mean daily	62.7,	5th
Mean maximum	81.9	
Mean minimum	59.8	
Mean daily range	22.1	
Greatest daily range	33.0,	30th
Least daily range	9 5	5th

Humidity.

Mean dew point	62.3
Mean force of vapor	.709
Mean relative humidity	80.6

Precipitation. In inches.

Total precipitation, in inches	4.28
Number of days on which .01 inch or more rain fell	12

*Temperature in ground shelter.

**Reduced to freezing and sea-level.

Wind.

Total movement	2847 m
Greatest daily movement	168m, 17th
Least daily movement	35m, 4th, 15th
Mean daily movement	92m
Mean hourly velocity	3.8m

Maximum pressure per square foot, 16.0 lbs= 57m per hour, 8th, 4 P, S.S.W.

Maximum velocity for 5 minutes, 30 m per hour, 8th, 4 P., S.S.W.

Prevailing direction, South Southwest.

Summary.

South Southwest	26 per cent
South	23 " "
Southwest	13 " "
North	10 " "
Other directions	28 " "

Weather.

Mean cloudiness observed	49 per cent
Total cloudiness recorded by the Sun Thermometer	154 hours = 33 per cent.
Number of clear days	12
Number of fair days	12
Number of cloudy days	7

Bright Sunshine.

Number hours recorded, 308, = 67 per cent.

Rain, 1st, 3d, 4th, 5th, 8th, 13th, 18th, 19th, 23d, 24th 27th, 28th.

Thunder and Lightning, 3d, 8th, 13th, 18th 23rd, 28th, 31st.

Hail, trace on 28th.

Gales, 57m, 8th, S.S.W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean, Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper	Mean Sensible Wet Bulb.	
1	30.04	29.81	29.942	76 0	6 P	57.5	5 A	66.7	67.2	66.7	5.2
2	29.84	29.78	29.818	88.0	4 P	69 0	6 A	78.5	76.2	71 3	12.5
3	29·88	29.75	29.830	83.0	2:30 P	65 0	12 P	74.0	72.0	68.7	6.5
4	30.12	29.88	30.028	73.5	3 P	63 5	12 P	68.5	66.5	64.3	5.5
5	30.12	30.09	30.111	68.5	3 P	59.0	5 A	63 7	62.7	60.5	5.6
6	30.09	29.93	30.010	82.0	4:30 P	59.0	5 A	70.5	68.4	62.0	12.4
7	30.05	29.91	29.983	84.0	3 P	57.5	5 A	70.7	70.0	63.7	11.9
8	30 00	29.85	29.923	87.5	2:30 P	62 0	5 A	74 7	69 7	67.0	9.7
9	30.18	30 00	30.119	82.0	5 P	55 5	5:30 A	68.7	67.5	61.7	13.7
10	30.21	30.15	30.194	79.0	4 P	55.5	5:30 A	67.3	67.2	60.5	13.4
11	30.18	30.08	30.136	81.5	4:30 P	60.5	6 A	71.0	67·4	63.3	9.5
12	30.17	30.06	30.119	94 0	4 P	64 0	4:30 A	79 0	75.8	70.5	11.3
13	30 09	30.01	30.056	88.0	1:30 P	67 0	12 P	77·5	73·5	68 5	4.9
14	30.16	30.09	30.148	80.0	5 P	60.0	12 P	70.0	69.2	62 7	12 0
15	30.16	30.10	30.147	85.0	5:30 P	52.5	6 A	68 7	67.7	64.3	13.3
16	30.18	30.08	30 136	86.5	3 P	58.0	5:30 A	72.3	72 5	67.3	13.6
17	30 14	29.99	30.070	86.5	2:30 P	61.5	5:30 A	74.0	73.1	70.3	11 5
18	29 99	29.86	29.924	90.5	2:30 P	68.0	12 P	79 3	76.2	71.7	10 4
19	29.96	29.90	29 943	83 5	5 P	66 0	5:30 A	74 7	73.1	68.5	12 9
20	30 02	29.96	29.998	78.5	1 P	59.5	6 A	69.0	68.5	64.7	11 1
21	30.03	29.95	30.001	87.5	5 P	58 0	6 A	72.7	71.1	66.0	14.0
22	30.03	29.92	29 970	86.5	4:30 P	57.5	5 A	72.0	71.5	64.0	12.4
23	29 95	29.67	29.756	77.5	3 P	65.0	3 A	71.3	71.0	69.0	1 8
24	30.05	29.70	29.932	71 0	2:30 P	60.0	12 P	65.5	65 7	61.3	2.2
25	30.22	30.05	30.139	78.0	5:30 P	59.0	5:30 A	68 5	65.7	61.7	10.2
26	30 23	30·18	30.213	76.5	5 P	59.5	6:30 A	68.0	65 8	61.3	9 6
27	30.20	29 95	30.092	73.0	1 P	53 5	5:30 A	63.3	63.0	60.5	5.4
28	29 95	29.82	29.894	82.0	1:30 P	59.5	12 P	70.7	68 2	64.0	6.5
29	29.99	29.90	29.946	79.5	4 P	54.0	6:30 A	66 7	67 0	60.7	13.6
30	30.04	29 92	29 974	82.0	4:30 P	49.0	5:30 A	65.5	66.8	59.7	13.4
31	29 95	29 90	29.936	86 5	1:30 P	57.0	5:30 A	71.7	69 8	62.5	10.7

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	64.5	.738	83.5	S.W.	71	2.0	20	2 P	11 A	5:30 P	.05	
2	68.5	.919	76.0	S.W.	156	1.0	14	1 P				
3	68.0	.743	91.5	S W.	81	0.5	10	4 P	8 A	12 P	.07	
4	63 0	.646	89.5	N.W.	35	0.0	—		5:30 P	12 P	.05	
5	59.5	.563	90.5	N N.E.	64	0.0	—		0 A	7 P	.21	
6	58.5	.666	74.5	N.	162	1.0	14	10 A				
7	60 0	.725	72.0	S.	162	4.0	28	3 P				
8	65 5	.749	84.5	S.	164	16 0	57	4 P	3:30 P	5 P	.86	
9	57.5	.680	70.0	N N E.	108	0.0	—					
10	56.0	.661	68.5	S.S.E.	66	0.0	—					
11	61 5	.652	85.5	S S.W.	163	1 5	17	6 P				
12	68.0	.858	83.5	S.S W.	111	1.0	14	1 A				
13	66.5	.782	85 0	S.	80	1.0	14	2 P	1:30 P	11:30 P	.17	
14	59.0	.634	74 5	N.E.	98	0 0	—					
15	61.5	.694	81.5	S.S.W.	35	0 0	—					
16	63.5	.844	69.5	S.S W.	84	1.0	14	6 P				
17	68.5	.841	83 5	S.	168	3 5	26	4 P				
18	70.5	.844	89.0	S.S.W.	148	3 0	24	5 A	7 P	12 P	.85	
19	66.5	.830	78 0	S.W.	66	0.0	—		0 A	3 A	.45	
20	63 0	.698	81.5	W.	41	0.0	—					
21	63.0	.764	76 0	N.	49	0.0	—					
22	60.0	.737	71 5	W.	54	0.5	10	2 P				
23	68.0	.768	89 5	S	73	1.0	14	1 P	0:30 P	11 P	.30	
24	59 5	.594	87 0	N E.	75	0.0	—		5:30 P	7 P	.09	
25	59.5	.618	82 5	S.E	70	0 0	—					
26	59 0	.606	83 5	S.	123	1.5	17	9 P				
27	59.0	.559	90 5	S S.W.	116	1.0	14	12 M	3 P	8 P	.43	
28	62.5	.643	89 5	S.	98	3.5	26	5 P	1 P	4:30 P	.75	
29	56.5	.650	71 5	N.	105	1.0	14	3 P				
30	55 5	.652	68.0	S.S W	43	0 0	—					
31	59.5	.623	76.0	S.S.W.	48	0.0	—					

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during July was generally normal except for the high humidity. The humidity was due in a large measure to the prevalance of wind from the South and South Southwest. The wind movement was very small and only a single gale was recorded, and that was of very short duration. The precipitation was well distributed throughout the month and most of it occurred with severe thunder and lightning.

The records of the several weather elements, compared with their respective normals show the following features: The mean barometer was very high for July, and the range of pressure was about eighty per cent of the normal value. The pressure was very steady for rather long periods, which accounts for the small wind movement. For about two-thirds of the time the daily wind movement was less than 100 miles.

The mean hourly temperature was slightly less than usual, and the maximum was practically normal. On only two days, however, did the temperature go above ninety degrees. The minimum temperature was nearly four degrees higher than the normal for this feature and that record was made about the last of the month. The range of temperature was unusually small.

The mean due point was about one degree higher than usual while the relative humidity was about seven points above the normal.

The total precipitation was practically normal. The amount of sunshine was large although there were several cloudy days.

J. E. OSTRANDER, Meteorologist.

H. H. SHEPARD, Acting Observer.

BULLETIN No. 404. AUGUST, 1922

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.04, 12th, 8 A
Minimum reduced to freezing,	29.34 7th, 7 P
Reduced maximum reading	30.33 12th, 8 A
Reduced minimum reading,	29.63, 7th, 7P
Mean semi-daily reduced	29.986
Monthly range	0.70

Air Temperature. In Degrees Fahr.

Highest	90.5, 17th, 2:30 P
Lowest	40.0, 22d, 5:30 A
Mean hourly	67.3
Mean of means of max. and min.	68.2
Mean sensible (wet bulb)	62.3
Monthly range	46.5
Highest mean daily	76.7, 16th
Lowest mean daily	60.0, 21st
Mean maximum	79.1
Mean minimum	57.2
Mean daily range	21.9
Greatest daily range	37.5, 22d
Least daily range	9.0, 24th, 25th

Humidity.

Mean dew point	59.8
Mean force of vapor	.646
Mean relative humidity	81.6

Precipitation. In inches.

Total precipitation, in inches	4.25
Number of days on which .01 inch or more rain fell	13

Wind.

Total movement	3007 m
Greatest daily movement	248m, 25th
Least daily movement	33m, 31st
Mean daily movement	97m
Mean hourly velocity	4m

Maximum pressure per square foot, 5.5 lbs= 33m per hour, 25th, 10 P, S.S.W.

Maximum velocity for 5 minutes, 20 m per hour, 25th, 9 P., S.S.W.

Prevailing direction, Southwest.

Summary.

South Southwest	23 per cent
South	16 " "
Southwest	13 " "
North Northeast	13 " "
North	10 " "
Northeast	10 " "
Other directions	15 " "

Weather.

Mean cloudiness observed	58 per cent
Total cloudiness recorded by the Sun Thermometer	173 hours = 40 per cent.
Number of clear days	6
Number of fair days	16
Number of cloudy days	9

Bright Sunshine.

Number hours recorded, 256 = 60 per cent.

Rain, 1st, 2d, 4th, 7th, 8th, 12th, 17th, 18th, 19th, 24th, 25th, 26th, 27th, 28th, 29th.

Thunder and Lightning, 1st, 6th, 7th, 17th, 18th, 19th, 24th, 26th.

Gales, none.

*Temperature in ground shelter.

**Reduced to freezing and sea-level.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	29.94	29.88	29.928	85.5	3 P	56.0	5 A	70.7	67.8	62.7	7.5
2	29.90	29.28	29.866	76.0	4 P	62 0	5 A	69.0	67 0	63.7	6.3
3	29.85	29.77	29.800	80.0	3:30 P	60.0	6:30 A	70.0	69.6	64.3	10.0
4	29.79	29.74	29.785	76.5	12 M	64.5	5:30 A	70.5	67.9	64.7	10.3
5	30.01	29.78	29.938	82.0	5:30 P	60.5	6:30 A	71.3	68.1	62.0	11.2
6	30.02	29.87	29.961	82.5	3:30 P	56.0	6:30 A	69.3	70.5	63.7	10.9
7	29.89	29.63	29.703	80.5	5 P	63.5	12 P	72.0	71.2	67.3	4.6
8	29 91	29.67	29.778	68.0	2:30 P	56 5	12 P	62.3	63 5	60.0	4.2
9	30.06	29.91	29.976	78.0	5:30 P	51.5	6:30 A	64.7	63.0	56.0	12.7
10	30.22	30.06	30.150	75.5	4 P	49.5	6 A	62 5	63.6	57.3	12.7
11	30.31	30.22	30.292	74 5	3:30 P	51.5	6 A	63.0	63.0	57.7	10.9
12	30.33	30.28	30.302	67 0	3 P	54.5	6 A	60 7	60.7	58.5	1.2
13	30.30	30.24	30.279	83 0	4:30 P	54.0	6:30 A	68.5	67.7	63.5	12.1
14	30.29	30.18	30.244	89.0	5 P	60.5	7 A	74.7	71.8	65.3	9.4
15	30.24	30.04	30.144	90.0	4 P	60.0	6:30 A	75 0	74.7	67.5	10.5
16	30 04	29.86	29.952	89.5	3:30 P	67.0	7 A	78.3	76.7	69.5	10.7
17	29 96	29.90	29.951	90.5	2:30 P	62.0	6 A	76.3	73.3	66.7	10.6
18	29 94	29.76	29.830	89.0	3 P	64 5	6 A	76 7	74.9	70.7	8.0
19	29.89	29.75	29.816	81.5	4 P	65 5	5 A	73 5	69.5	66.7	5.5
20	29.93	29.80	29.865	69.0	1:30 P	50.0	12 P	59.5	60.7	52.5	10.5
21	30.09	29.90	30.008	75.5	4 P	46.0	6 A	60.7	60.0	54.7	12 8
22	30.12	30.03	30 082	81.5	3 P	44.0	5:30 A	62.7	63.8	55.0	9.9
23	30 06	29.99	30.037	83.5	4 P	59.0	6:30 A	71.3	70.4	64.0	11.2
24	30.02	29.97	29.997	73.5	6:30 P	64.5	6 A	69.0	67 8	65.5	1 9
25	29.97	29.74	29.812	75.5	4 P	66.5	4 A	71 0	70.6	68.0	1.5
26	29.90	29.72	29.858	71.5	4 P	59.0	12 P	65.3	66 0	60.3	0 8
27	30.01	29.90	30.000	73.0	3:30 P	54 0	5:30 A	63 5	62.5	60.3	4.7
28	30.01	29.96	30.004	66.0	3:30 P	56.5	12 P	61.3	61 5	60.0	1.4
29	30.05	29 97	30.017	82 0	4:30 P	51.5	6:30 A	66 7	66.8	61 0	11.8
30	30.07	30.00	30.058	81.0	4 P	55.0	12 P	68.3	67.5	61.5	10.6
31	30.17	30.07	30.131	80 5	3:30 P	48.5	6 A	64 5	65.2	60.0	10.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	61.5	.620	88.5	S.W.	53	3.0	24	7 P	6 P	9:30 P	.46	
2	62.0	.642	87.5	N.E.	38	0.0	—		10:30 P	11:30 P	T	
3	61.5	.702	78.5	S.W.	44	0.0	—					
4	63 5	.660	89.0	S.S.W.	40	0.0	—		7:30 A	4 P	.06	
5	59.5	.630	81.0	W.N.W.	50	1.0	14	3 P				
6	59.5	.751	68 0	S.S.W.	113	2.0	20	3 P				
7	65 0	.776	79.0	S.S.W.	218	4.0	28	4 P	0:30 A	11:30 P	.24	
8	57 0	.564	85.0	N.N.E.	111	1 5	17	12 M	4:30 A	11 P	.04	
9	51.5	546	71.0	N.N.E.	112	0.0	—					
10	53.5	.565	73.0	N.E.	76	0.0	—					
11	54 0	.567	75.5	E.N.E.	93	1.0	14	2 P				
12	56.5	.535	86.5	N.N.E.	54	0.0	—		3 P	8 P	.20	
13	61.5	.640	89 0	S.W.	51	0 0	—					
14	63.5	.698	86 0	S.S.W.	53	0.0	—					
15	65.0	.772	82.5	S.	56	0 0	—					
16	67.0	.867	76 5	S.W.	95	0.0	—					
17	64.9	.760	79.0	E.	50	0.0	—		2:30 P	3:30 P	.06	
18	69.5	.833	88.0	S.	151	3.0	24	4 P	9 P	12 P	.46	
19	66.0	.691	93 0	S.S.W.	102	0.0	—		0 A	6:30 P	.82	
20	47.5	.496	67.5	N.	232	3.0	24	1 P				
21	50.5	.518	72.0	N.	154	4.0	28	12 M				
22	50 0	.570	65.5	S.S.W.	78	1.0	14	2 P				
23	60.0	.720	74 0	S.	217	3.5	26	4 P				
24	64.0	.695	85 5	S.	86	1.5	17	10 P	0 A	12:30 P	.36	
25	60.5	.752	87.0	S S.W.	248	5.5	33	10 P	5:30 A	6 P	.09	
26	59 0	.550	92.0	N.W.	131	3.0	24	0 A	4:30 A	11:30A	.65	
27	59.5	.547	94 5	N.N.E.	44	0.0	—	—	3:30 P	12 P	.46	
28	59.5	.536	94 5	N.E.	115	1.0	14	10 A	0 A	9:30 A	.35	
29	57.5	.635	76 5	S.	38	0 0	—		8:30 P	9 P	T	
30	59.5	.623	84.5	N.	71	0.5	10	5 P				
31	57.5	.598	81.0	W.	33	0.0	—					

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during August was generally normal with few features of special interest. The second week of the month was rather cool and the third week was the warmest period of month. The last week of the month had considerably foggy weather and the precipitation was considerable. The maximum daily temperature was above 80 degrees on about one-half the days but there was practically no excessively warm weather.

The records of the several weather elements show the following features: The barometer was very steady and the mean pressure for the month was practically normal. The total wind movement was slightly less than usual and no gales were registered on the pressure chart. The wind was from the southwest quadrant more than usual and there was considerable wind from the northeast quadrant as well. On about one-half the days the wind movement was so small that no pressure was recorded on the pressure chart.

The maximum and minimum temperatures were both nearly the average values for this month and the mean temperature was practically normal.

The mean dew point was about normal and the relative humidity rather high.

The total precipitation was slightly more than the normal and there were numerous thunderstorms but they were of much less intensity than those of July.

The sunshine record was large, considering the character of the other weather elements.

J. E. OSTRANDER, Meteorologist.

H. H. SHEPARD, Acting Observer.

BULLETIN No. 405. SEPTEMBER, 1922

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.15, 26th, 8 A
Minimum reduced to freezing,	29.38, 24th, 7 P
Reduced maximum reading	30.46, 26th, 8 A
Reduced minimum reading,	29.67, 26th, 7 P
Mean semi-daily reduced	30.114
Monthly range	0.79

Air Temperature. In Degrees Fahr.

Highest	86.5, 5th, 4:30 P
Lowest	30.0, 26th, 7 A
Mean hourly	62.8
Mean of means of max. and min.	64.0
Mean sensible (wet bulb)	57.3
Monthly range	56.5
Highest mean daily	73.1, 10th
Lowest mean daily	47.3, 26th
Mean maximum	75.9
Mean minimum	52.1
Mean daily range	23.8
Greatest daily range	39.5, 23d
Least daily range	11.5, 7th

Humidity.

Mean dew point	54.8
Mean force of vapor	.539
Mean relative humidity	83.4

Precipitation. In inches.

Total precipitation, in inches	2.27
Number of days on which .01 inch or more rain fell	8

Wind.

Total movement	2775 m
Greatest daily movement	194m, 25th
Least daily movement	26m, 5th
Mean daily movement	92m
Mean hourly velocity	3.9m

Maximum pressure per square foot, 4.5 lbs= 30m per hour, 15th, 8 P, S.

Maximum velocity for 5 minutes, 24 m per hour, 15th, 7 P., S.

Prevailing direction, Southwest.

Summary.

South Southwest	30 per cent
Southwest	17 " "
South	10 " "
North Northeast	10 " "
Other directions	33 " "

Weather.

Mean cloudiness observed	41 per cent
Total cloudiness recorded by the Sun Thermometer	142 hours = 38 per cent.
Number of clear days	10
Number of fair days	12
Number of cloudy days	8

Bright Sunshine.

Number hours recorded, 231 = 62 per cent.

Rain, 3d, 4th, 6th, 12th, 14th, 15th, 20th, 24th.

Frosts, First, 19th.

Frosts, Killing, 26th.

Thunder and Lightning, 3d, 4th, 6th, 12th, 14th, 15th, 24th.

Gales, none.

*Temperature in ground shelter.

**Reduced to freezing and sea-level.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean, Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.14	30.07	30.108	82.0	4 P	53.0	6 A	67.5	67.1	60.3	9.5
2	30.15	30.11	30.136	79.0	5 P	62.0	6 A	70.5	68.0	63.7	7.5
3	30.15	30.00	30.052	78.0	2 P	64.5	5 A	71.3	70.1	66.3	4.1
4	30.00	29.91	29.932	77.0	5:30 P	62.0	12 P	69.5	69.3	66.5	3.0
5	29.96	29.91	29.941	86.5	4:30 P	55.0	6:30 A	70.7	68.0	59.7	11.7
6	30.06	29.91	29.962	77.0	1:30 P	58.5	6 A	67.7	67.5	63.5	3.9
7	30.22	30.06	30.206	66.0	4:30 P	54.5	7 A	60.3	61.6	56.5	4.9
8	30.32	30.22	30.316	74 0	3 P	55.5	7 A	64.7	64.8	59.3	9.7
9	30.31	30.16	30.249	74.5	4 P	61.0	7 A	67 7	67.1	63.3	5.3
10	30.16	30.03	30.099	84.5	4 P	67.0	3 A	75.7	73.1	67.0	7.2
11	30.06	29.92	29.987	84 5	3 P	66.5	6 A	75.5	72.7	66.5	8.0
12	29.92	29.83	29.860	73.5	9:30 A	61.0	12 P	67.3	67 7	64 5	2.2
13	30 01	29.90	29.998	75.0	4 P	51 0	6:30 A	63.0	63.3	57.0	11.5
14	30.10	30.01	30.056	75.5	2:30 P	56.5	6 A	66 0	65.4	61 3	4.4
15	30.11	30.01	30.066	84.5	3 P	60.0	5 A	72.3	70.0	65 5	7.1
16	30.15	30.08	30.120	75.0	4 P	57.0	12 P	66.0	64.3	56.3	10.6
17	30 29	30.15	30.206	66.5	4 P	44.5	7 A	55.5	55.0	49.0	7.5
18	30 43	30.29	30.372	66.5	3 P	41.0	6:30 A	53 7	52.5	46.7	8.5
19	30.43	30.31	30.362	69.5	3 P	35.0	6:30 A	52 3	52.2	47.3	4.0
20	30.31	30.09	30.138	69.5	4 P	52.0	5 A	60.7	58.5	54.5	4.5
21	30.14	30.05	30.092	76.5	4 P	51.0	3 A	63.7	61.7	55.3	10 2
22	30.12	29.97	30.048	79.5	4 P	42.0	7 A	60 7	59.5	52.3	11.0
23	30.02	29.97	29.998	84.0	4 P	44.5	7 A	64.3	63.8	60.0	10.5
24	29 97	29.67	29.789	82.5	3:30 P	49.0	7 A	65 7	63.9	56.0	7 3
25	30.34	29.82	30.192	62.0	4 P	41.0	12 P	51.5	53.3	44.5	11.0
26	30.46	30.25	30.364	64.0	4 P	30.0	7 A	47.0	47.3	38.5	11.0
27	30.25	30.07	30.138	72.0	4 P	39 5	7 A	55.7	55.7	49.7	10.5
28	30.30	30.16	30.268	71.0	4:30 P	45.0	7 A	58 0	56.3	51.5	10.1
29	30.26	30 12	30.191	81.5	4 P	50.0	5 A	65 7	61 1	57.5	7.3
30	30.21	30.13	30.190	85.0	4 P	54.0	7 A	69 5	63.8	59.0	6.9

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	58.5	.600	83.5	S.S.W.	50	0.0	—					
2	62.0	.643	87.5	S.S.W.	91	0.5	10	2 P				
3	65 0	.708	88.0	S.	165	1.0	14	12 M	7 P	10:30 P	.09	
4	65.5	.680	94.0	S.S.W.	59	0.0	—		9 A	12 M	.84	
5	56.0	.605	76.0	N.W.	26	0.0	—					
6	61.0	.653	84.0	E.	45	0.0	—		1:30 P	3 P	.08	
7	54.0	.515	82.0	N.N.E.	108	1.5	17	3 A				
8	57 0	.562	83.0	S.W.	68	0.0	—					
9	62.0	.650	84.0	S.S W.	132	1.0	14	3 P				
10	64.5	.752	82.5	S.S.W.	142	1.0	14	7 P				
11	65.0	.703	89 5	S.	161	2.5	22	1 P				
12	62 5	.687	84 0	W.	139	1.5	17	9 A	3:30 A	2 P	.74	
13	54.0	.534	79.0	W.	87	1.0	14	1 P				
14	60.0	.581	89.0	S.W.	78	1.0	14	11 P	9:30 P	12:00 P	.20	
15	64.0	.692	89 5	W.N.W.	129	4.5	30	8 P	8 P	9 P	.28	
16	53.5	.519	79.5	N.N.E.	178	1.0	14	3 P				
17	46.5	.381	84.0	N.N.E.	83	0.5	10	9 A				
18	44.5	.348	84.5	N.	50	2.0	20	11 A				
19	44.5	.373	81.5	N.E.	40	1.0	14	2 P				
20	52 0	.448	90 5	S.	67	0.0	—		8 A	8:30 A	.03	
21	52.5	.503	79 5	W.S.W.	61	0.0	—					
22	49 0	.450	79.5	S.W.	57	0.0	—	—				
23	59.0	.544	91.5	S.W.	35	0.0	—	—				
24	53.0	522	79.5	N.W.	83	4 0	28	6 P	4:30 P	5 P	.01	
25	37.5	.358	64.0	N.	194	2.5	22	1 P				
26	32.5	.270	72.0	S.W.	73	0.5	10	3 P				
27	45.5	.424	72.5	S.S W.	168	2.0	20	1 P				
28	49.5	.415	86.0	S.S.W	66	0.5	10	10 P				
29	56.5	.508	92.0	S.S.W.	75	0.0	—	—				
30	57.5	.546	91.0	S.S.W.	65	0.0	—					

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during September was in general normal with but few unusual features. The first half of the month had several thunder storms and the precipitation for that period was practically normal. The last half of the month was practically without rain and but little cloudy weather. The first appearance of frost was on the 19th and it was very light and did no damage. On the morning of the 26th a moderately heavy frost was noted and uncut corn was damaged.

The records of the several weather elements show the following features: The mean barometer was rather high and the range of pressure relatively small. Change in pressure was generally slow. As a result of the steady pressure the total wind movement was only about 80 per cent of the normal and no gales were recorded. The persistency of the wind from the southwest quadrant was about as marked as during July and August and the relative humidity was correspondingly high.

The month was slightly warmer than usual although there were no very high temperatures. The range of temperature was slightly more than normal.

The mean dew point was about a degree higher than normal.

The total precipitation was slightly more than one-half the usual amount and nearly all of it was accompanied by thunder and lightning.

The amount of sunshine was considerably more than normal although there were several cloudy days.

J. E. OSTRANDER, Meteorologist.

G. E. LINDGSKOG, Observer.

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BULLETIN No. 406. OCTOBER, 1922

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.18,13th, 12 P
Minimum reduced to freezing,	29.21, 25th. 3 P
Reduced maximum reading	30.49, 13th,12 P
Reduced minimum reading,	29.50, 25th, 3 P
Mean semi-daily reduced	29.988
Monthly range	0 99

Air Temperature. In Degrees Fahr.

Highest	88.5, 2d, 4 P
Lowest	20.5, 21st, 7:30 A
Mean hourly	50.5
Mean of means of max. and min.	51.7
Mean sensible (wet bulb)	44.9
Monthly range	68.0
Highest mean daily	68.6, 5th
Lowest mean daily	36.3, 21st
Mean maximum	63.3
Mean minimum	40.2
Mean daily range	23.1
Greatest daily range	39.0, 21
Least daily range	5.0, 7th

Humidity.

Mean dew point	40.3
Mean force of vapor	.362
Mean relative humidity	75.5

Precipitation. In inches.

Total precipitation, in inches	2.55
Number of days on which .01 inch or more rain fell	6

*Temperature in ground shelter.

**Reduced to freezing and sea-level.

Wind.

Total movement	4670 m
Greatest daily movement	322m, 31st
Least daily movement	21m, 2d
Mean daily movement	151m
Mean hourly velocity	6.3m
Maximum pressure per square foot, 9.0 lbs= 42m per hour, 23d, 9 P, S.S. W.; 24th, 11A N.W.	
Maximum velocity for 5 minutes, 27 m per hour, 24th, 11A., N.W.	
Prevailing direction, West Southwest.	

Summary.

South Southwest	29 per cent
West Southwest	13 " "
Northwest	13 " "
North	10 " "
North Northeast	10 " "
Other directions	25 " "

Weather.

Mean cloudiness observed	32 per cent
Total cloudiness recorded by the Sun Thermometer . . 151 hours = 44 per cent.	
Number of clear days	8
Number of fair days	13
Number of cloudy days	10

Bright Sunshine.

Number hours recorded, 190 = 56 per cent.

Rain, 7th, 8th, 10th, 11th, 17th, 23d.

Frosts, 14th, 20th, 21st, 28th, 29th,30th.

Ice formed, 21st.

Thunder and Lightning, 8th, 23d

Gales, 41m, 18th: W.; 42m, 23d, S. S. W.; 42m. 24th N. W.; 36m. 30th. N.; 35m. 31st, N.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.27	30.16	30.225	85.5	4 P	50.5	6 A	68.0	64.4	58.3	7.2
2	30.19	30.00	30.090	88.5	4 P	49.5	7 A	69.0	62.6	55.5	8.0
3	30.04	29.91	29.993	83.5	2:30 P	51.5	7 A	67.5	64.3	55.3	7.6
4	30.09	29.85	29.982	73.5	4:30 P	39.0	7:30 A	56.3	55.9	49.0	9.3
5	29.87	29.78	29.833	85.5	2:30 P	55.5	5:30 A	70.5	68.6	61.7	9.1
6	30 03	29.87	29.996	64 0	4 P	53.5	7:30 A	58.7	57.9	53.0	5.5
7	30.04	29.80	29.959	55.0	2 P	50.0	12 P	52.5	52.1	50.3	0.0
8	29.80	29.62	29.650	67.5	9 P	50.0	0 A	58 7	57.0	59.5	0.1
9	30.09	29.73	29.947	76.0	4 P	56.5	12 P	66.3	63.5	57.5	9.1
10	30 09	29 91	29.997	61.5	3 P	54.5	7 A	58 0	56 7	56.3	0.0
11	29.91	29.73	29.790	69.5	4:30 P	55.0	6 A	62.3	59 0	57.7	0.2
12	30.09	29.75	29 940	65.0	3 P	44.0	12 P	54.5	55.3	46.7	6.8
13	30.49	30.09	30.419	59.0	4:30 P	33.5	12 P	46.3	44.3	38.0	10.3
14	30.49	30.23	30.378	63.0	3 P	28.0	7 A	45.5	45.9	40.7	8.0
15	30.23	29.91	30.004	68.5	3 P	51.0	7 A	59 7	56.0	52.5	4.0
16	29.97	29.86	26.928	73.0	4 P	48.5	5 A	60.7	58.4	55.7	3.3
17	29.92	29.72	29.822	70.0	4 P	44 5	12 P	57.3	58.4	49 5	5.1
18	30.14	29.89	30.014	53.0	1:30 P	35.0	12 P	44.0	42.7	35.3	7.7
19	30.28	30.02	30.162	50.0	3:30 P	23 0	6 A	36.5	37.0	29 3	9.7
20	30.34	30.02	30.272	48 0	3 P	27.0	12 P	37 5	37.8	29.5	8.3
21	30.38	30.23	30.320	54.5	3 P	20.5	7:30 A	37.5	36.3	30 5	9 6
22	30.27	30.11	30.192	66.0	3:30 P	29.0	3 A	47.5	46.4	38.3	7 3
23	30.11	29.51	29.758	63.0	3 P	43.0	6 A	53.0	52.4	51.0	1.3
24	29.87	29.56	29.786	47.0	0 A	30.5	12 P	38.7	39.3	32.5	6.6
25	26.86	29.50	29.626	59.5	2:30 P	29.5	2 A	44.5	45.2	40.5	3.3
26	29.80	29 53	29.661	50 0	1 P	34.5	12 P	42 3	42.9	35 5	3.8
27	29.81	29.67	29 760	45.0	6 P	29.5	7 A	37.3	38.0	34.0	1.4
28	30.01	29.74	29 919	49.0	3 P	30.0	7 A	39.5	38.9	32.0	9.3
29	30.07	29.97	30.048	53 0	2:30P	29.0	6 A	41 0	40.0	32.7	9.4
30	30.06	29.96	30.056	55 0	1:30 P	31.5	7 A	43.3	41 9	34.0	9.4
	30.19	30 00	30.090	60.0	2:30 P	38.0	6 A	49.0	47.0	39.3	9.2

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	56.0	.547	86.5	S.S.W.	49	0.0	—					
2	53.5	.480	88.0	S.S.W.	21	0.0	—					
3	51.0	.535	72.0	N.N.E.	70	1.0	14	4 P				
4	46.5	.400	83.0	S.S.W.	92	1.0	14	5 P				
5	59.0	.654	78.5	W.S.W.	152	1 5	17	2 P				
6	51.5	.438	85.0	S.E.	74	0.0	10					
7	49.0	.379	92.0	E.S.E.	48	0.0	—		5:30 P	12 P	.50	
8	59 0	.537	96.0	S.S W.	56	0.5	10	5 P	0 A	8 P	.70	
9	55.5	.527	83.5	S.W.	58	0.0	—					
10	55.5	.458	97.0	N.N.E.	88	0.0	—		1:30 A	12 P	.93	
11	56 0	.509	90 5	S.S.W.	113	5.0	32	3 P	0 A	2:30 P	.07	
12	40.0	.401	62.5	W.S W.	255	2.5	22	2 P				
13	32.5	.266	69 5	N.N.E.	103	1.5	17	9 A				
14	36.5	.312	75.5	S.S.W	109	3.0	24	8 P				
15	51.0	.419	91.0	S.	83	0.0	—					
16	54.5	.483	90.5	S.S.W.	96	1.5	17	4 P				
17	44.0	.412	74.5	N.W.	175	5.0	32	3 P	7 A	9:30 A	.11	
18	27.0	.250	59.0	W.N.W.	302	8.5	41	5 P				
19	20.0	.194	58.0	W.S.W.	157	2.5	22	9 P				
20	24 0	.182	72.5	N.	245	3 0	24	3 A				
21	24.5	.193	70.5	W.S.W.	68	0.0	—					
22	32.5	.286	67 5	S.S.W.	76	1.0	14	6 P				
23	49 5	.397	90.5	S.S.W.	279	9.0	42	9 P	4 P	10:30 P	.24	
24	24.5	.222	61.0	N.W.	312	9 0	42	11 A				
25	34.5	.312	65 0	S.W.	206	4.5	30	1 P				
26	28.5	.250	64 0	N.W.	256	4.0	28	3 P				
27	29.5	.222	73.5	W N.W.	169	1.5	17	1 P				
28	24.0	.214	62.0	N..W.	165	2.5	22	4 P				
29	22.5	.228	56.0	N.N.W.	197	4.5	30	1 P				
30	27.5	.226	67.5	N.	274	6.5	36	3 P				
	30.5	.302	57.0	N.	322	6.0	35	4 P				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was generally seasonable and more pleasant than usual. Comparatively few stormy days occurred and the amount of sunshine was large. While the range of temperature was large the month proved to be more mild than normally the case. The first week of the month was unusually warm and several very high temperatures for the time of year were noted. The wind movement was rather large with an abnormal amount from the southwest quadrant. The persistancy of the wind from this quarter has been a marked feature of the weather for several months. The precipitation was very light after the first third of the month.

Comparing the records of the several weather elements with their respective normals the following features are noted: The mean barometer was low for this time of year and the range was rather small. The total wind movement was more than ten per cent greater than the normal and a number of gales were recorded the last third of the month. The gales, however, were of only moderate intensity.

The mean temperature was but slightly greater than the normal, notwithstanding the general impression that the month was much milder than usual. The maximum temperature was nearly ten degrees higher than usual and the minimum a few degrees lower than usual, giving a very large range for the month. Thin ice was formed in shallow places on the 21st, a date much earlier than usual. Several days showed an average hourly temperature equal to good summer weather.

The mean due point and relative humidity were both practically normal.

The total precipitation was about two-thirds of the normal and nearly all of it occurred during two well defined storms.

The amount of sunshine was about ten per cent greater than normal although the number of cloudy days was rather large. Two thunder storms were noted which was rather unusual.

J. E. OSTRANDER, Meteorologist.

G. E. LINDSKOG, Observer.

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BULLETIN No. 407. NOVEMBER, 1922

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing;	30.08,13th, 9A
Minimum reduced to freezing,	29.05, 24th. 4A
Reduced maximum reading	30.39, 13th, 9A
Reduced minimum reading,	29.36, 24th, 4A
Mean semi-daily reduced	30.015
Monthly range	1.03

Air Temperature. In Degrees Fahr.

Highest	66.0, 1st 3 P
Lowest	14.5, 27th, 6A
Mean hourly	39.1
Mean of means of max. and min.	39.5
Mean sensible (wet bulb)	34.6
Monthly range	51.5
Highest mean daily	51.5, 12th
Lowest mean daily	24.0, 27th
Mean maximum	47.6
Mean minimum	31.3
Mean daily range	16.3
Greatest daily range	36.0, 2d
Least daily range	3.5, 7th

Humidity.

Mean dew point	29.4
Mean force of vapor	.237
Mean relative humidity	73.4

Precipitation. In inches.

Total precipitation, in inches	1.56
Number of days on which .01 inch or more rain fell	7

*Temperature in ground shelter.

**Reduced to freezing and sea-level.

Wind.

Total movement	4566 m
Greatest daily movement	333m, 25th
Least daily movement	39m, 4th
Mean daily movement	152m
Mean hourly velocity	6.3m

Maximum pressure per square foot, 9.0 lbs= 42m per hour, 24th, 4 P, N.W.

Maximum velocity for 5 minutes, 32 m per hour, 24th, 1P., N.W.

Prevailing direction, Northwest.

Summary.

Northwest	27 per cent
North Northwest	10 " "
South Southwest	13 " "
West Northwest	10 " "
North Northeast	10 " "
North	10 " "
Other directions	10 " "

Weather.

Mean cloudiness observed	40 per cent
Total cloudiness recorded by the Sun Thermometer	184 hours = 63 per cent.
Number of clear days	3
Number of fair days	11
Number of cloudy days	16

Bright Sunshine.

Number hours recorded, 109 = 37 per cent.

Rain, 2d, 3d, 6th, 7th, 8th, 14th, 15th, 20th

Snow, 24th, 27th, 28th.

Frosts, bebore the 16th, 1st, 2d, 10th, 13th, 14th.

Hail, 20th.

Gales, 35 or more miles per hour, 42m, 24th, N. W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.31	30.19	30.269	66.0	3 P	31.0	7:30 A	48.5	45.1	35.5	9.4
2	30.28	30.10	30.188	61.0	3:30 P	25.0	7 A	43.0	41 8	36.0	7.4
3	30.27	30.13	30.216	44.0	C A	40.0	12 P	42.0	41.5	40.0	0.0
4	30.28	30.27	30.276	48.0	5 P	40.0	6 A	44.0	43.6	42 3	0.0
5	30.29	30.14	30.237	52.5	2:30 P	43.0	6A	47.7	46 7	43.5	0.0
6	30.21	30.12	30.163	48.0	4 P	40.5	6 A	44.3	44.2	43.0	0.0
7	30.17	30.02	30.118	44.0	0 A	40.5	10 A	42.3	41.8	42.0	0.0
8	30.02	29.70	29.820	48.0	4 P	42.0	0 A	45.3	44.2	42.3	0.1
9	30.20	29.72	29.982	53.0	2 P	33 0	12 P	43 0	43.3	35.7	4.9
10	30.33	30.20	30.288	53.5	3 P	26 0	7 A	39 7	39.9	33.3	9.0
11	30.25	30.04	30.156	62.5	3:30 P	41.0	7 A	51 7	48.6	40.0	6.3
12	30.26	30.03	30.124	60.5	1 P	41 0	12 P	50.7	51.5	44.3	3.3
13	30.39	30.26	30.344	52.0	3 P	28.0	7:30 A	40 0	38.9	30.5	8.7
14	30 30	30.03	30.192	48.5	8:30 P	23.0	7 A	35 7	37.6	33.5	2.3
15	30.03	29.80	29.856	53.0	2 P	43.0	12 P	48.0	48.5	44 0	0.0
16	30.25	29.85	30 086	44.5	4 P	34.0	12 P	39.3	39.6	33.5	7.4
17	30.36	30.00	30.200	50.5	3:30 P	22.0	7 A	36.3	36.9	31.3	4.1
18	30.00	29.77	29.909	53.0	2 P	37.5	4 A	45.3	45.4	40 5	0 0
19	29.89	29.76	29.849	57.5	3 P	36.0	12 P	46.7	47.8	41.7	5.8
20	29.89	29.75	29.800	46.0	5 P	32 5	4 A	39.3	38.7	36.5	0.4
21	30.03	29.84	30.005	41.0	2 P	31.0	12 P	36.0	36.1	32.0	3.0
22	30.02	29.87	29.932	35.5	1:30 P	27.0	12 P	31.3	30.7	26.7	0.6
23	29.94	29.40	29.725	42.0	2 P	20.0	7 A	31.0	31.0	25.5	5.5
24	29.55	29.36	29.476	36.0	1 A	27 0	12 P	31.5	32.3	27.5	6.2
25	29.65	29.54	29.614	33.5	3 P	23.5	7 A	28 5	27.4	23.3	4.3
26	29 88	29.64	29.783	34.0	2 P	18 0	12 P	26.0	26 0	20.5	5.8
27	29.89	29.70	29.812	36.0	3 P	14.5	6 A	25.3	24.0	21.7	1.5
28	29.92	29 67	29.830	39.0	2:30 P	26.5	7 A	32.7	29.7	26.0	3.0
29	30.10	29.92	30.042	36.0	2 P	22.5	3 A	29.3	30.6	27.3	6.5
30	30.20	30.00	30.171	49 5	1:30 P	30.0	2 A	39.7	39.4	37 5	3.5

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Total in Inches. Snow.
1	31.0	.233	75.0	N.W.	124	0.5	10	3 A				
2	30.5	.264	72.5	S.W.	53	0.0	—		8 P	12 P	.12	
3	37.5	.264	86.5	N.N.E.	93	0.0	—		0 A	5 A	.03	
4	39.5	.293	83.0	S.E.	39	0.0	—					
5	41.5	.301	87.0	N.	49	0.5	10	1 P				
6	42 0	.288	92.5	W.S.W.	42	0.0	—		7 A	12 P	.52	
7	41.5	.271	96.0	N.N.E.	81	0.0	—		0 A	12 P	.28	
8	40.0	.286	87.0	N.N.W.	63	1.0	14	5 P	0 A	8:30 P	.12	
9	29 5	.246	67 0	N..W.	232	5.0	32	11 A				
10	26.5	.246	65 5	W.N.W.	148	0.5	10	0A				
11	32.0	.303	62.0	S.S.W.	132	1 0	14	11 P				
12	38.5	.355	65 5	N.W.	237	3 0	24	9 A				
13	21.0	.206	56.5	W.N W.	143	1.0	14	3 P				
14	27.0	.242	68 0	S.S.W.	64	2.0	20	10 P	1:30 P	6 P	T	
15	40.5	.324	78.5	W.	212	3.5	26	4 A	6 A	12 M	.15	
16	27.0	.250	65.5	N.W.	257	5.5	33	10 A				
17	27.0	.202	74.5	W.	133	2.5	22	4 P				
18	34.5	299	68.5	S.S W.	156	0.0	—					
19	35.0	.321	66 0	W N.W.	174	2 5	22	7 A				
20	34.0	232	83 5	N.	57	2 0	20	9 P	6 A	1 P	.34	
21	27.0	.204	72 5	N.N.W.	260	4 0	28	2 P				
22	20.5	.164	70 5	N N.W.	194	2.5	22	5 P				
23	19 5	.162	68.5	S.S.W	141	1.5	17	6 P				
24	21.0	167	73 0	N.W.	322	9.0	42	4 P	3 A	1 P	T	T
25	14.5	.143	61 5	N.W.	333	5.5	33	2 P				
26	12.5	.128	62 0	N.W.	216	1 5	17	10 A				
27	18.5	.128	84.0	N.N.E.	69	1.5	17	10 P	8 P	12 P	T	T
28	22.0	.150	80.0	N.	229	3.0	24	8 P	0 A	3 A	T	T
29	21.0	.169	68.5	N.W.	193	3.0	24	1 P				
30	30.5	.272	62.0	W.	120	0.5	10	2 A				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during November was practically normal, except the precipitation record. The total amount of rain was small, and more than one-half of it occurred during a single storm early in the month. As the precipitation was below normal in September and October, the ground is very dry at the beginning of the Winter season. Notwithstanding the small rainfall during the month the amount of cloudiness was large. While a large percentage of the wind was from the Northwest quadrant the wind was very changeable.

The records of the several weather elements show the following features of interest: The mean barometer was slightly lower than the normal and the range rather small for the time of year. The pressure was generally high during the first half of the month. The first third of the month had a rather small wind movement.

The mean hourly temperature was one-half of a degree higher than the normal, while the maximum and minimum records were about the average values. There were only a few frosts before the middle of the month.

The mean dew point and relative humidity were both slightly less than their normal values.

The total precipitation was about one-half the normal. Traces of snow were noted on a few days near the close of the month.

The total wind movement was normal and but one gale was recorded.

The amount of sunshine was considerably less than the normal and more than one-half the days were recorded as cloudy.

J. E. OSTRANDER, Meteorologist.

G. E. LINDSKOG, Observer.

BULLETIN No. 408. DECEMBER, 1922

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea-level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.36, 11th, 9A
Minimum reduced to freezing,	29.35, 29th. 1A
Reduced maximum reading	30.69 11th, 9A
Reduced minimum reading,	29.67, 29th, 1A
Mean semi-daily reduced	30.151
Monthly range	1.02

Air Temperature. In Degrees Fahr.

Highest	54.0, 1st, 4P
Lowest	-6 5, 20th, 7A
Mean hourly	24.7
Mean of means of max. and min.	25.1
Mean sensible (wet bulb)	22.2
Monthly range	60.5
Highest mean daily	46.7, 1st
Lowest mean daily	6.1, 20th
Mean maximum	33.6
Mean minimum	16.5
Mean daily range	17.1
Greatest daily range	35.0, 31st
Least daily range	8.0, 17th

Humidity.

Mean dew point	18.3
Mean force of vapor	.139
Mean relative humidity	81.8

Precipitation. In inches.

Total precipitation, in inches	3 15
Total snow, in inches	18.5
Number of days on which .01 inch or more rain fell	10
Days of sleighing	18

Wind.

Total movement	4256 m
Greatest daily movement	467m, 6th
Least daily movement	34m, 20th
Mean daily movement	137m
Mean hourly velocity	5.7m

Maximum pressure per square foot, 16.5 lbs= 57m per hour, 29th, 1A., N.

Maximum velocity for 5 minutes, 36 m per hour, 29th, 0A., N.

Prevailing direction, West.

Summary.

North	13 per cent
Northwest	16 " "
South, Southwest	16 " "
Southwest	13 " "
North Northwest	10 " "
Other directions	32 " "

Weather.

Mean cloudiness observed	54 per cent
Total cloudiness recorded by the Sun Thermometer	197 hours = 70 per cent.
Number of clear days	2
Number of fair days	10
Number of cloudy days	19

Bright Sunshine.

Number hours recorded, 86 = 30 per cent.

Rain. 5th, 8th, 12th, 15th, 17th.

Snow. 3d, 5th, 7th, 8th, 12th, 14th, 17th, 20th, 21st, 28th, 29th.

Sleet. 8th, 28th.

Gales. 35 or more miles per hour, 37m. 2d. N.W.; 42m, 5th, N.W.; 49m, 6th, N.W.; 49m, 12th, N.W.; 35m, 13th, W.N.W.; 46m, 28th, N.N.E.; 57m. 29th, N.

*Temperature in ground shelter.

**Reduced to freezing and sea-level.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.13	29.81	29.868	54.0	4 P	38.0	12 M	46.0	46 7	44.3	0.0
2	30.17	29.83	30.108	49.5	0 A	26.0	12 P	37.7	36.0	30.5	6.2
3	30.16	29.98	30.061	35.0	4 P	22.0	5 A	28.5	29.6	28.0	0.0
4	30.18	30.00	30.101	46.0	2:30 P	24.0	7 A	35.0	34.2	28.5	7.1
5	30.15	29.90	29.980	38.0	4 P	29.0	2 A	33.5	33.1	30.5	1.7
6	30.42	30.02	30.264	31.0	0 A	14 0	7:30 A	22 5	23.3	19.0	7.7
7	30.46	30.14	30.314	21.0	4 P	10.5	7 A	15 7	14.9	13.5	0.0
8	30.14	29.86	29.973	25.5	7 P	16.0	6 A	20.7	19.5	20.7	0.0
9	30.24	29.86	30.126	39.0	3:30 P	22.5	4 A	30 7	28 8	25.5	6.4
10	30.60	30.22	30.476	29 0	4 P	11.0	12 P	20.0	21.8	17.5	4.7
11	30 69	30.28	30.542	31.0	3 P	0.0	7 A	15.5	16 2	12.0	5 7
12	30.28	29.80	29.936	42.0	4 P	23.0	12 P	32.5	30.9	29.5	0.2
13	30 32	30.06	30.258	26.0	4 P	14.0	12 P	20 0	19.1	15.7	6.1
14	30 31	29.94	30.168	24.0	8:30 P	12.0	1:30 A	18.0	20.3	20.5	0.0
15	30.19	29.77	29.906	35.0	6 P	21.0	12 P	28.0	27.5	27.0	0 0
16	30.45	30.19	30.412	32.5	3:30 P	3.0	7:30 A	17 7	18.5	14.5	6.3
17	30.37	29.95	30.078	26.0	9 P	18.0	3.30 A	22 0	21.8	21.7	0.0
18	30.40	30.11	30.324	27.5	12 M	13.5	12 P	20.5	22.0	17.7	6.8
19	30.56	30 39	30.471	24.0	2 P	2 0	12 P	13 0	11.3	6.7	4.8
20	30.68	30.24	30.524	16.5	11 P	−6.5	7 A	5 0	6.1	4.7	3.0
21	30.24	29 88	29 983	31.0	4 P	15.0	1 A	23.0	21.5	19.5	0.0
22	29.97	29.71	29.841	28.0	4 P	5 0	6 A	16.5	16.9	16.7	0 0
23	30.07	29.75	30.028	39.0	2 P	18.0	2 A	28.5	31.8	30.3	2.2
24	30.11	30.02	30.068	42.5	2 P	33.0	8 A	37.7	35 6	33.0	1.0
25	30.11	30.05	30.070	43 0	1:30 P	32.0	7 A	37.5	35.0	32.0	2.0
26	30.06	29.90	29.986	41.5	3 P	32 5	6 A	37 0	34.8	34.0	0.9
27	30.14	30.02	30.105	39 0	2:30 P	27.5	9 A	33.3	33.8	31.5	0.0
28	30.06	29.68	29.870	33.5	0 A	16.0	7 P	24 7	21.4	18.7	0.0
29	30.23	29 67	30.021	22.0	2 P	11.0	12 P	16.5	16.8	15.0	4.7
30	30.51	30.23	30.486	29 5	4 P	4.5	7:30 A	17.0	13.6	7.5	8.0
31	30.51	30.01	30.264	41.0	12 P	6.0	7 A	23.5	22 9	22.5	0.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	35.5	.330	65.0	S.S.W.	188	5.5	33	11 P				
2	27.0	.182	83.5	N.W.	266	7.0	37	9 A				
3	25.0	.163	84.0	S.	68	1.0	14	2 P	4 P	11:30 P	T	T
4	26.5	.165	89.0	S. W.	137	2.0	20	2 P				
5	22.5	.196	67 5	E.	95	9.0	42	11 P	4 A	1 P	.21	1
6	13.5	.116	73.5	N. W.	467	12.0	49	10 A				
7	8.0	.089	74.0	N .N. W.	79	0.0	—		3 P	12 P	.10	1½
8	19 0	.117	92.5	N.	101	0.0	—		0 A	12 P	.25	1
9	19.0	.155	69.5	N. W.	109	1.5	17	12 M				
10	12.0	.108	75.5	N.	143	1.5	17	9 A				
11	7.0	.096	77.0	W. S. W.	69	2 0	20	5 P				
12	23.5	.182	74.5	S. W.	85	12.0	49	11 P	5 A	12 P	.12	T
13	10.5	.097	76.5	W. N. W.	356	6.0	35	2 A				
14	17 0	.120	80.0	S .W.	88	0.5	10	9 A	8 A	12 P	.34	4
15	23.0	.158	81.0	N.W.	65	2.0	20	7 P	0 A	8 A	.15	
16	11.5	.092	82.5	S.S.W.	71	0.5	10	2 P				
17	19 5	.124	86.5	N. N. W.	93	0.0	—		5:30 A	7 P	.81	4
18	11.5	.109	71.0	W. N W.	175	3.5	26	2 P				
19	4.0	.064	85 0	N. N. W.	62	0.5	10	4 P				
20	−1.0	.064	74 0	E. S.E.	34	0.0	—		10 P	12 P	T	T
21	17.5	.110	92 0	N. E.	47	0.0	—		0 A	4 A	.02	½
22	14.5	.101	91.0	N.	72	2.5	22	4 P				
23	24.5	.187	72.5	S.W.	117	1.0	14	11 P				
24	31.0	.195	90.5	S.S.W	94	1.0	14	3 A				
25	30 0	.188	90 0	S.S.E.	35	1.0	14	4 P				
26	33.0	.199	95.5	S.S.W.	107	1.0	14	2 P				
27	29.0	.185	90.5	S.E.	44	0.5	10	1 P				
28	17.0	.107	92.0	N.N.E.	271	10.5	46	10 P	3 A	12 P	1.05	5
29	13.5	.090	90.0	N.	453	16.5	57	1 A	0 A	10 A	.10	1½
30	3.0	.066	79 0	N.W.	208	5.0	32	1 A				
31	21.0	.145	91.5	S.S.W.	87	2 5	22	7 P				

**Rain or melted snow at base of tower. * Included in following day.

Annual Summary for 1922.

Pressure. In inches.

Maximum reduced to freezing, ... 30.36, Jan. 25th, 10 A.
Minimum reduced to freezing. . . . . 28.60, Oct. 11th, 12 P.
Maximum reduced to freezing and sea-level, ... 30.70, Jan. 25th, 10 A.
Minimum reduced to freezing and sea-level, ... 28.92, Oct. 11th, 12 P.
Mean semi-daily reduced to freezing and sea-level, ... 30.058
Annual range, ... 1.78

***Air Temperature.** In degrees Fahr.

Highest, ... 94.0, July 12th, 4:00 P.
Lowest, ... —13.5, Feb. 18th, 7:30 A.
Mean hourly, ... 47.2
Mean of means of max. and min., ... 47.8
Mean sensible (wet bulb), ... 43.0
Annual range, ... 107.5
Highest mean daily, ... 76.7, Aug. 16
Lowest mean daily, ... —0.8, Feb. 17
Mean maximum, ... 58.3
Mean minimum, ... 37.3
Mean daily range, ... 21.0
Greatest daily range, ... 43.5, Apr. 10
Least daily range, ... 3.5, Nov. 7th.

Humidity.

Mean dew point, ... 39.2
Mean force of vapor, ...380
Mean relative humidity, ... 78.7

Wind.

Prevailing direction, ... West

Summary.

South Southwest . . . . . 19 per cent
Northwest . . . . . 12 " "
North . . . . . 10 " "
West Northwest . . . . . 10 " "
Southwest . . . . . 10 " "
Other directions, ... 39 " "
Total movement, ... 49,970 m
Greatest daily movement, ... 467 m., Dec. 6
Least daily movement, ... 12 m., Jan. 17
Mean daily movement, ... 137 m
Mean hourly velocity, ... 5.7 m
Maximum pressure per square foot, 30.0 lbs.,= 78 m. per hour, Jan. 22d, 12 M., W.
Maximum velocity for 5 minutes, 42 m. per hour, Jan. 22d, 12 M., W.; June 12th, 2 P., W.N.W.

Temperature in ground shelter.

Precipitation. In inches.

Total precipitation, rain or melted snow, . 45.94
Snow total in inches, ... 58¾
Number of days on which .01 or more rain or melted snow fell, ... 120

Weather.

Mean cloudiness observed, ... 45 per cent.
Total cloudiness recorded by Sun Thermometer, ... 1932 hrs.=43 per cent.
Number of clear days, ... 117
Number of fair days, ... 127
Number of cloudy days, ... 121

Bright Sunshine.

Number of hours recorded, 2522 hrs.=57 per cent.

Daes of Frosts.

Last, ... May 12th
First, ... Sept. 19th

Dates of Snow.

Last, ... April 23d
First, ... Nov. 24th
Total days of sleighing, ... 74

Gales of 50 or More Miles Per Hour.

Jan. 22d, 78m., W.: Mar. 7th, 63m., S.: April 20th, 53m., W.N.W.: June 12th, 56m., W.N.W.: July 8th, 57m., S.S.W.: Dec. 29th, 57m., N.

G. E. LINDSKOG,
Observer.

J. E. OSTRANDER,
Meteorologist.

Massachusetts Agricultural College,
AMHERST, MASS.

BULLETIN No. 409. JANUARY, 1923

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.52, 22d, 11A
Minimum reduced to freezing,	29.12, 10th, 6A
Reduced maximum reading	30.84, 23d, 11A
Reduced minimum reading,	29.43, 10th, 6A
Mean semi-daily reduced	30.078
Monthly range	1.41

Air Temperature. In Degrees Fahr.

Highest	50.5, 1st, 12M
Lowest	-12 0, 31st, 6A
Mean hourly	20.3
Mean of means of max. and min.	19.7
Mean sensible (wet bulb)	17.4
Monthly range	62.5
Highest mean daily	43.6, 1st
Lowest mean daily	6.9, 30th
Mean maximum	29.6
Mean minimum	9.8
Mean daily range	19.9
Greatest daily range	45.5, 18th
Least daily range	6.0, 28th

Humidity.

Mean dew point	13.6
Mean force of vapor	.115
Mean relative humidity	80.1

Precipitation. In inches.

Total precipitation, in inches	6.02
Total snow, in inches	33.0
Number of days on which .01 inch or more rain fell	18
Days of sleighing	31

Wind.

Total movement	4392 m
Greatest daily movement	315m, 1st
Least daily movement	23m, 20th
Mean daily movement	142m
Mean hourly velocity	5.9m

Maximum pressure per square foot, 11.5 lbs = 48m per hour, 1st, 10A., S.S.W.

Maximum velocity for 5 minutes, 28 m per hour, 1st, 9A., S.S.W.

Prevailing direction, North Northwest.

Summary.

North	23 per cent
North Northwest	19 " "
West Northwest	13 " "
Northwest	10 " "
Other directions	35 " "

Weather.

Mean cloudiness observed	58 per cent
Total cloudiness recorded by the Sun Thermometer	218 hours = 74 per cent.
Number of clear days	3
Number of fair days	6
Number of cloudy days	22

Bright Sunshine.

Number hours recorded, 76 = 26 per cent.

Rain, 1st, 20th, 21st, 22d, 24th, 25th.

Snow, 3d, 4th, 6th, 7th, 8th, 9th, 10th, 11th, 12th, 14th, 15th, 18th, 21st, 22d, 24th, 25th. 28th.

Gales. 35 or more miles per hour, 48m, 1st, S.S.W.; 40m, 6th, N.; 36m, 13th, W.N.W.; 35m, 25th, N.W.

*Temperature in ground shelter.

**Reduced to freezing and sea-level.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30 01	29.48	29.747	50.5	12 M	37.5	12 P	44.0	43 6	40.3	0.0
2	30.22	29.91	30.168	38.5	2 P	23.0	12 P	30 7	32.8	27.0	7.6
3	30.20	29 84	30.100	29.5	4 P	22.0	0:30 A	25.7	25.4	23.5	0.0
4	29.95	29.77	29.858	33.5	1:30 P	17.0	12 P	25.3	24.1	20.7	3.6
5	30.13	29.95	30.083	32.0	2:30 P	9.5	3:30 A	20.7	22.9	21.3	4.8
6	30.21	29.95	30.100	31.5	11 A	14 0	12 P	22 7	23.6	21.7	0 0
7	30.43	30.21	30.362	14 0	0 A	4.0	10 A	9 0	9 5	6.7	0.0
8	30.24	29.50	29.750	29.0	10 P	11.0	0 A	20.0	20.6	19.7	0.0
9	29 72	29.46	29.625	32.0	8:30 P	24.5	7 A	28 3	28.6	27.3	0.2
10	29.83	29.43	29.597	30.0	9 A	18.0	9 P	24.0	24.9	22 3	0.0
11	30.10	29.83	30.070	32.5	3:30 P	6.5	7 A	19.5	19 2	12.0	7 1
12	30.05	29.77	29.836	21.5	3 A	15.0	10 P	18.3	18.6	17.5	0.0
13	30.30	29.88	30.209	21.5	3 P	7.5	7:30 A	14 5	14.0	10.7	7.1
14	30.33	29.84	30.110	21.5	2:30 P	6.0	7.30 A	13.7	15.2	13.7	0.0
15	29.84	29.58	29.653	36.0	6 P	20.0	0 A	28.0	28.1	27.3	2 0
16	29.89	29.61	29.706	32.0	2 P	20.0	7:30 A	26 0	26.7	21.5	0.8
17	30.49	29.89	30.352	22.0	4 P	-4.0	12 P	9 0	12.5	6.5	7.6
18	30.49	29.89	30.158	37.5	12 P	-8.0	4 A	14.7	11 2	17.0	0.0
19	30.52	29 87	30.340	37.5	0 A	8 5	12 P	23 0	27.0	22.7	7.3
20	30.70	30.13	30.520	30.5	12 P	2 0	6 A	16.3	16.1	15 0	1.1
21	30.13	29 94	30.022	42.0	5 P	30.5	0 A	36.3	37.9	39.5	0.0
22	30.48	30.07	30.341	37.0	0 A	20 0	12 P	28.5	28.8	24.7	0 2
23	30.84	30.48	30.768	25.0	2 P	6.5	7:30 A	15.7	15.1	8.5	0.0
24	30.72	29.68	30.268	28.0	12 P	-4.0	7 A	12.0	10.2	7.7	0.0
25	30.00	29.55	29.789	33.5	10:30 A	12.5	12 P	23.0	26.3	21.7	3.7
26	30 07	29.90	29.980	19 0	4:30 P	-3 0	7 A	8 0	10.4	6.5	1.6
27	30.07	29.93	30.060	31.5	3:30 P	-2.0	7 A	14 7	14.8	8.7	8.0
28	30.06	29.90	29.964	16.0	1 P	10.0	7:30 A	13.0	13 2	11 5	0 0
29	30.32	29 97	30.228	22.5	3:30 P	-1.5	6:30 A	10 5	9.2	5.0	5.0
30	30.44	30.32	30.414	25.5	5 P	-8.5	7 A	8.5	6.9	4.3	6.7
31	30.42	30.07	30.245	25.5	10:30 P	-12.0	6 A	6.7	11 4	7.3	1.5

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement In Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	36 0	.281	77.5	W. S. W.	315	11.5	48	10 P	0 A	3 P	1.22	
2	19.5	.169	64.5	N.W.	267	5.5	33	1 A				
3	21.0	.132	87.0	N.N.E.	68	1.0	14	12 P	4 P	12 P	.25	3
4	18.0	.116	89.5	N. N. W.	188	2.5	22	3 A	0 A	9 A	.22	2½
5	18.5	.122	86 5	W.	75	0.0	—					
6	19.5	.124	89.5	E.N.E.	187	8.0	40	5 P	10:30A	12 P	.14	2
7	3.0	.064	82.0	N.	203	1.5	17	11 A	0 A	3 A	T	T
8	18 5	.118	89.5	N.	249	5.5	33	2 P	6 A	8 P	.95	6
9	25.0	.156	89.0	W.S.W.	74	0 5	10	2 A	11 A	12 P	.16	1½
10	15 0	.136	70 0	W.N W.	122	2.5	22	11 A	0 A	1 P	.06	½
11	5.0	.085	68.5	N. N. W.	65	2.5	22	1 A	10:30P	12 P	.04	½
12	13.5	.104	80.5	N. E.	123	2.5	22	4 P	0 A	11 P	.33	4
13	1.5	.082	60.0	N.W.	251	6.5	36	4 P				
14	11.5	.087	89.0	S.W.	45	0.0	—		11 A	12 P	.30	3
15	24.0	.158	86.5	W. N. W.	63	1.5	17	8 P	0 A	11 A	.13	1½
16	15.0	.130	68 5	W. N. W.	258	5.5	33	3 A				
17	14.0	.067	57.5	N. N. W.	174	3.0	24	10 A				
18	10 0	.120	76.5	S.S W.	42	4.5	30	12 P	12:30 P	3 P	.03	½
19	15 5	.140	67.5	W.N.W.	298	5.0	32	6 A				
20	12.5	.097	90 0	N N.E.	23	0.0	—	—	6:30 P	12 P	.60	
21	39 0	.246	96 0	S.S.W	158	3 0	24	9 A	0 A	12 P	.52	T
22	21.0	.142	84.0	N. W.	191	2.0	24	4 P	0 A	8 A	.07	¼
23	3.5	070	79 5	N.	136	1.5	17	3 A				
24	5.5	.075	89.5	N.	24	0.5	10	10 P	9 A	12 P	.80	6
25	17.5	.126	80.0	N. N. W.	248	6.0	35	2 P	0 A	8 A	.05	T
26	1 5	.070	78.0	N.	67	0 0	—	—				
27	2.5	075	74 0	N	85	2 0	20	3 P			T	
28	8 0	.079	85.0	N	167	3.0	24	4 A	12 M	9 P	.15	1¾
29	3.0	.058	88.0	N.N.W.	73	1.0	14	4 P				
30	1.0	.062	83.5	N.N.W.	90	2 0	20	1 P				
31	2.5	.075	76.0	S.E.	63	0.0	—	—				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was very stormy and the sky was overcast a large part of the time. The precipitation was very large and more than one-half of it occurred as snow. The snow storms were very frequent and several of them of considerable severity. Most of the rainfall was absorbed by the snow on the ground so that the run-off was not large. There was but little thawing during the month. The month was considerably colder than usual and the temperature went below zero on seven days. The maximum temperature was registered on the first and the minimum on the last day of the month. More than two-thirds of the days were either cloudy or overcast.

The records of the several weather elements show the following features of interest: The mean barometer was practically normal and the range rather small. The maximum and minimum pressures were both considerably higher than their respective normals. The total wind movement was less than usual and the persistency of direction from the northwest quadrant was very marked. The gales were few and of moderate severity.

The mean hourly temperature was more than four degrees below the normal and only three days had an average temperature above freezing. All of the zero weather was during the last half of the month. The range of temperature on the 18th was exceptionally large.

The mean dew point was about four degrees lower than usual and the relative humidity was high.

The sunshine record was but little more than one-half the usual amount.

J. E. OSTRANDER, Meteorologist.

G. E. LINDSKOG, Observer.

Agricultural College,
AMHERST, MASS.

BULLETIN No. 410. FEBRUARY, 1923

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.32, 6th, 9A
Minimum reduced to freezing,	29.25, 3d. 10A
Reduced maximum reading	30.66 6th, 9A
Reduced minimum reading,	29.56, 3d, 10A
Mean semi-daily reduced	30.117
Monthly range	1.10

Air Temperature. In Degrees Fahr.

Highest	46.0, 27th, 4-30P
Lowest	-10.5, 19th, 5-30A
Mean hourly	18.2
Mean of means of max. and min.	17.9
Mean sensible (wet bulb)	13.7
Monthly range	56.5
Highest mean daily	34.6, 2d
Lowest mean daily	3.8, 18th
Mean maximum	29.2
Mean minimum	6.5
Mean daily range	22.7
Greatest daily range	43.0, 8th
Least daily range	6.5, 28th

Humidity.

Mean dew point	7.7
Mean force of vapor	.101
Mean relative humidity	73.2

Precipitation. In inches.

Total precipitation, in inches	1.81
Total snow, in inches	12½
Number of days on which .01 inch or more rain fell	13
Days of sleighing	28

Wind.

Total movement	4013 m
Greatest daily movement	327m, 15th
Least daily movement	35m, 20th
Mean daily movement	143m
Mean hourly velocity	6.0m

Maximum pressure per square foot, 14.5 lbs = 54m per hour, 3d, 7 P., N.W.

Maximum velocity for 5 minutes, 33 m per hour, 3d, 7P., N.W.

Prevailing direction, Northwest.

Summary.

North	14 per cent
Northwest	18 " "
West Northwest	21 " "
West	14 " "
Other directions	33 " "

Weather.

Mean cloudiness observed	43 per cent
Total cloudiness recorded by the Sun Thermometer	163 hours = 55 per cent.
Number of clear days	5
Number of fair days	11
Number of cloudy days	12

Bright Sunshine.

Number hours recorded, 133 = 45 per cent.

Rain, 1st, 2d, 3d, 13th.

Snow, 6th, 10th, 11th, 12th, 13th, 14th, 20th, 22d, 23d, 24th, 25th, 26th, 27th, 28th.

Gales, 35 or more miles per hour, 54m, 3d, N.W.; 35m, 4th, W.N.W.; 43m, 14th, W.N.W.; 47m, 15th, W.N.W.; 44m, 16th, N.W.; 35m, 22d, W.N.W.

•Temperature in ground shelter.

••Reduced to freezing and sea-level.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.13	29.78	29.964	40.5	3 P	14 0	7 A	27.3	29 8	22.7	5.2
2	30 01	29.75	29.954	40.0	2 P	31.0	12 P	35.5	34 6	28.5	7.6
3	30.05	29.56	29.758	41.0	1:30 P	18.0	12 P	29.5	30.6	27.5	0.3
4	30.41	30.05	30.391	18 0	0 A	4.5	7 A	11.3	9 3	4.5	0.3
5	30.51	30.34	30.439	22.5	2:30 P	7.5	0 A	15.0	13.3	9.5	4.5
6	30.66	30.34	30.536	17.5	3:30 P	−7.0	7:30 A	5 3	8.3	2.3	4.4
7	30.34	30.27	30.300	33.0	4:30 P	1.0	7 A	17.0	12.7	4.5	8.5
8	30.30	29.93	30.132	35.5	4 P	−7.5	7 A	14.0	15.8	12 3	4 0
9	30.02	29 85	29.980	36.0	4:30 P	27.5	12 P	31 7	31.9	28.0	2.6
10	30.30	29.98	30.161	34.0	2 P	2.0	12 P	18.0	21.4	14.0	4.1
11	30.40	30.26	30.368	31.0	5 P	−0.5	3:30 A	15.3	13.5	10.0	6.6
12	30.59	30.32	30.496	32.5	4 P	12.0	7 A	22 3	20.8	13.5	8.5
13	30 32	29.82	29.960	28.5	3 P	16.5	2 A	22.5	23.9	21.0	0.0
14	29 94	29.76	29.867	27.5	3:30 P	10.5	11 P	19 0	19.3	15.7	2 0
15	30 03	29.88	29.962	20.0	3:30 P	2 5	7 A	11.3	12.8	7.5	8.0
16	30.03	29.87	29.914	14.5	5 :30 P	−2.0	6 A	6.3	6 7	1.0	8.2
17	29 97	29.85	29.919	20.5	3 P	−6.0	7 A	7.3	8.6	6.0	6.0
18	30.16	29 97	30.032	13.0	2:30 P	−8 0	7 A	2.5	3.8	1.3	9 0
19	30.25	30.15	30.183	28 0	4 P	−10.5	5:30 A	8.7	9.4	4.3	3.3
20	30.26	30.12	30.189	21.5	4 P	−7.0	7 A	7.3	8.8	4.3	0.0
21	30.31	30.14	30.242	33.5	5 P	−1.0	7 A	16.3	15.3	6.5	9.0
22	30.15	29.91	30.022	33.5	4 P	1.5	7 A	17 5	18.4	14.3	6.0
23	30.27	30.07	30.180	23.0	3 P	3.0	12 P	13.0	13.5	8.5	9.0
24	30.38	30.02	30.250	23.0	3:30 P	−7.5	7 A	7.7	10.7	7.5	8.3
25	30.17	29.92	30.046	35.0	1:30 P	18 0	8 A	26.5	28.0	27.0	4.5
26	30.30	30.02	30.176	32.0	11 P	11.0	7 A	21.5	21.2	19.7	0.0
27	30.02	29.88	29.936	46.0	4:30 P	28 0	7 A	37.0	34.5	30.5	2.7
28	30.00	29.83	29.920	36.5	3 P	30.0	7 A	33.3	33.0	30.0	0.5

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft.	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	11.5	.143	74.0	S.	54	1.0	14	10 P	6 P	12 P	.11	
2	20.5	.184	61.0	N.N.E.	139	2.0	20	10 A	0 A	4 A	.05	
3	23.5	.160	83.5	W. N W.	216	14.5	54	9 P	5 A	11 A	.23	
4	−6 5	.062	54.5	N.W.	298	6 0	35	1 A				
5	3 5	.074	71.5	N.W.	94	4.0	28	10 P				
6	−4.0	.058	71.0	N.	104	1.5	17	1 P	9 P	12 P	.21	2
7	−2.5	.060	70.0	N.	98	0.5	10	6 A				
8	9.0	.102	83.0	S.S W.	130	4.0	28	5 P				
9	21.5	.177	65.0	W.N.W.	268	3.5	26	9 A				
10	7.0	.096	66.5	N.	112	1.5	17	2 P	3 A	11 A	.22	2
11	5.0	077	77.0	N.	49	0 5	10	10 P	8:30 A	2 P	.02	¼
12	3.0	095	57.0	N.W.	110	0.5	10	10 P	11 P	12 P	.01	T
13	17 5	.121	80 0	N.N.E.	153	1.0	14	11 A	0 A	12 P	.55	4
14	12.5	.096	84.0	N.W.	135	9.0	43	10 P	0 A	1 P	.15	1
15	−1.5	.070	62.0	N. W.	327	11.0	47	5 A				
16	−3.5	.052	74 0	N.W.	204	9 5	44	12 M				
17	−0.5	.064	68.5	W.N.W.	152	3.0	24	1 P				
18	−2.5	.049	81 0	W.	180	5.0	32	1 P				
19	0.0	.067	77.0	S.W.	83	1.0	14	4 P				
20	−0.5	.063	76.5	W. N. W.	35	0.0	—	—	1 P	8 P	T	T
21	0.0	.068	69.5	W. N.W.	47	0.5	10	3 P				
22	9.5	.100	78.0	W.	146	6.0	35	8 P	2 A	4 A	T	T
23	1.5	.071	70 0	W.N.W.	201	5.0	32	8 P	1 A	3 A	T	T
24	1.0	.072	70.5	W.	139	3 0	24	11 P	8 P	12 P	T	T
25	24 0	.154	86.0	W.S.W.	315	5 0	32	4 P	0 A	8 A	.02	¼
26	13.5	.126	69 0	W,	87	0.5	10	2 P	10:30A	12 P	.15	2½
27	27.5	.182	85.0	N.N.E.	43	0.0	—	—	0 A	4A	.02	¼
28	26.5	.177	84.5	S.	74	0.5	10	9 P	3 A	12 P	.07	½

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month, while less stormy than that of January, was far from pleasant The precipitation, while rather small, was nearly all in the form of snow, which added to the large amount on the ground at the beginning of the month made a depth of snow of from two to three feet in unexposed places.

The most pronounced feature was the unusually low temperature, especially during the last half of the month. The temperature was below zero on more than one-third of the days of the month, and on one-half the days the maximum was below freezing. Only three days had an average temperature above freezing.

The mean temperature was about six degrees lower than the normal and the maximum and minimum were both considerably lower than usual. The month proved to be the coldest of the winter. If the period from the 3d to the 27th is taken I believe it will show as low a temperature as any period of equal length since this station was established.

The mean barometer was rather high and the range small for the time of year. The wind movement was about twenty per cent less than the normal and the persistency of direction from the Northwest quadrant was noticeable. Several gales were registered on the pressure chart and some were of considerable severity.

The mean dew-point the lowest ever recorded at this station for this month and the relative humidity was very low.

The total precipitation was but little more than one-half the normal and the storms were all small and unimportant.

The amount of sunshine, while much larger than in January, was somewhat less than normal.

J. E. OSTRANDER, Meteorologist.

G. E. LINDSKOG, Observer.

Massachusetts Agricultural College,
AMHERST, MASS.

BULLETIN No. 411. MARCH, 1923

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.46, 15th, 10A
Minimum reduced to freezing,	28.83, 7th. 10A
Reduced maximum reading	30.78, 15th, 10A
Reduced minimum reading,	29.15, 7th, 10A
Mean semi-daily reduced	30.022
Monthly range	1.63

Air Temperature. In Degrees Fahr.

Highest	60.0, 23d, 2P
Lowest	-4.0, 9th, 7A
Mean hourly	28.1
Mean of means of max. and min.	28.6
Mean sensible (wet bulb)	24.9
Monthly range	64.0
Highest mean daily	46.8, 23d
Lowest mean daily	12.9, 9th
Mean maximum	39.6
Mean minimum	17.6
Mean daily range	22.0
Greatest daily range	36.0, 9th
Least daily range	8.0, 13th

Humidity.

Mean dew point	20.0
Mean force of vapor	.159
Mean relative humidity	76.3

Precipitation. In inches.

Total precipitation, in inches	1.98
Total snow, in inches	8
Number of days on which .01 inch or more rain fell	10
Days of sleighing	23

Wind.

Total movement	6058 m
Greatest daily movement	405m, 5th
Least daily movement	45m, 13th
Mean daily movement	195m
Mean hourly velocity	8.1m

Maximum pressure per square foot, 17.5 lbs= 59m per hour, 28th, 3 P., W.N.W.

Maximum velocity for 5 minutes, 36 m per hour, 28th, 2P., W.N.W.

Prevailing direction, West Southwest.

Summary.

Southwest	19 per cent
West Northwest	19 " "
Northwest	16 " "
South Southwest	13 " "
South	13 " "
Other directions	20 " "

Weather.

Mean cloudiness observed	40 per cent
Total cloudiness recorded by the Sun Thermometer	179 hours = 48 per cent.
Number of clear days	12
Number of fair days	7
Number of cloudy days	12

Bright Sunshine.

Number hours recorded, 192 = 52 per cent.

Rain, 4th, 13th, 14th, 16th, 19th, 22d, 23d, 24th, 27th.

Snow, 6th, 7th, 10th, 12th, 24th, 28th, 30th, 31st.

Gales, 35 or more miles per hour, 37m, 4th, W.N.W.; 48m, 5th, N.W.; 35m, 11th, W.N.W.; 39m, 14th, N.W.; 41m, 16th, S.S.W.; 52m, 19th, W.N.W.; 40m, 20th, N.W.; 48m, 24th, N.W.; 35m, 25th, S.S.W.; 59m, 28th, W.N.W.; 41m, 29th, N.W.; 47m, 31st, N.W.

*Temperature in ground shelter.

**Reduced to freezingand sea-level.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	29.83	29.76	29.800	42.5	4 P	22.5	7 A	32.5	32.1	25.7	9.1
2	29.89	29.82	29.861	46.0	2 P	20.5	3 A	33.3	33 6	28.3	2.3
3	29.85	29.63	29.712	58.5	3:30 P	32.0	7 A	45.3	41.5	36.3	6.8
4	29.91	29.47	29.688	47.5	9 P	34 5	7 A	41.0	38.2	36.0	0.3
5	30.17	29.63	30.030	36.0	0 A	16.0	12 P	26.0	27.6	24.0	10.0
6	30.23	29.79	30.090	21.0	5 P	7.5	7 A	14.3	14.5	11.5	0.0
7	29.79	29.15	29.364	28.5	2:30 P	10.0	12 P	19.3	17.1	15 3	3.6
8	30.25	29.74	30.108	30.0	4 P	10.0	0 A	20.0	19.0	17.7	10.5
9	30.45	30.25	30.434	32.0	3 P	−4.0	7 A	14.0	12.9	7.7	10.7
10	30.37	29.72	29.901	36.5	9 P	4.0	2 A	20.3	22.2	21.7	0.0
11	30.13	29.83	30.026	43.0	4:30 P	25.0	6:30 A	34.0	31.2	27.7	10.7
12	30.13	29.68	29.826	34.0	5 P	23.5	3 A	28.7	29.4	30.5	0.0
13	29.79	29.67	29.748	39.0	12 M	31.0	3 A	35.0	33.2	32.3	0.1
14	30.45	29.69	30.168	36.0	4:30 P	18.5	12 P	27.3	27.0	22.7	7.6
15	30.78	30.45	30.672	40.0	4 P	9.0	7 A	24.5	23.5	17.5	10.3
16	30.52	29.71	29.965	47.0	2:30 P	25.5	0 A	36.7	36 0	32.5	0.0
17	30.34	29.95	30.256	41.0	5:30 P	21.0	12 P	31.0	31.1	25.3	9.8
18	30.37	29.99	30.226	45.0	3:30 P	13.0	7 A	29.0	28.9	26.5	9.8
19	29.99	29.33	29.573	39.0	2 P	11.0	12 P	25.0	28.3	24.0	0.0
20	30.31	29.69	30.206	27.0	5 P	7.0	1 A	17.0	15.9	13 0	10.8
21	30 38	30.29	30.353	49.0	2 P	22 0	0 A	35 5	35.3	32 3	8.2
22	30.33	29.99	30.126	53.0	3:30 P	29 0	7 A	41.0	39.5	37.5	2.1
23	30.00	29.74	29.835	60.0	2 P	38 0	12 P	49.0	46.8	45.0	2.5
24	30.10	29.76	29.939	46.0	3:30 P	24.5	12 P	35.3	35.3	29.7	8.8
25	30.35	30.04	30.238	41.5	5:30 P	20.0	7 A	30.7	29.5	28.3	10.2
26	30.27	30.00	30.243	36.5	5 P	20.0	12 P	28.3	28.5	23 3	10.4
27	30.27	29.82	30.022	45.5	3 P	17.5	7 A	31.5	30.8	27.8	8.0
28	30.14	29.84	30.046	29.0	2 P	2.5	12 P	15.7	15.7	9 8	9.8
29	30.40	30.13	30.273	28.0	4 P	1.0	3 A	14.5	14.6	13.0	9.5
30	30.13	29 82	29.881	43.5	4 P	24.5	0 A	34.0	32.4	31.5	1.1
31	30.34	29.81	30.067	27.5	3 P	10.0	12 P	18.7	19.8	17.0	8.6

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	19 5	.156	70.0	N.N W.	135	1.5	17	9 A				
2	23.0	.178	74.5	S.W.	59	0.0	—	—				
3	31.0	.246	71.0	W.	85	1.0	14	1 P				
4	33.0	.228	83.0	S.	78	7.0	37	11 P	8:30 A	8 P	.04	
5	20.0	.140	81.0	W.N.W.	405	11.5	48	4 A				
6	5 5	.080	72.5	N.	98	0.0	—	—	4 P	12 P	.08	1
7	10.0	.096	76.5	N.W.	296	5.0	32	11 A	0 A	12 M	.37	4
8	13.0	.108	74.5	W.N.W.	225	3.0	24	2 A				
9	4.0	.070	83.0	N.N.W.	65	0.0	—	—				
10	17 5	.140	78.0	S.S W.	137	5.5	33	11 A	8 A	5 P	.15	2
11	22.5	.166	76.0	W.N.W.	229	6.0	35	4 A				
12	28.5	.175	92.5	E.S.E.	74	1.5	17	8 A	4 A	12 P	.38	½
13	30.0	.190	90 0	S.	45	0.0	—	—	0 A	12 P	.25	
14	19.0	.132	80.5	N.W.	254	7.5	39	4 P	0 A	2 A	T	
15	13.0	.113	78.5	S.	83	2.5	22	8 P				
16	30.0	.196	88.5	S.W.	239	8.5	41	1 P	6 A	12 P	.55	
17	19.0	.154	69.5	N.W.	226	3.0	24	7 A				
18	22.5	.162	77.0	S.S.W.	136	4.0	28	3 P				
19	17.0	.152	69.5	S.W.	224	13.5	52	10 P	8 A	11 A	.08	
20	4.0	.092	62.5	W. N.W.	358	8.0	40	3 A				
21	27.0	.209	73.5	S.S.W.	208	3.0	24	4 P				
22	35.0	.250	84.5	S.	88	0.5	10	4 P	10 A	11 A	T	
23	41.5	.339	79.5	S.W.	111	0.5	10	6 P	7:30 P	12 P	.06	
24	20.5	.198	58.5	N,W.	292	11 5	48	5 P	5:50 P	6 P	T	T
25	24.0	.170	78.5	S.W.	230	6.0	35	7 P				
26	16.5	.141	67.5	N.	243	5.5	33	6 A				
27	23 5	.171	77.5	S S.W.	194	4.5	30	1 P	9 P	10 P	T	
28	3.5	.076	69 5	N.W.	388	17.5	59	3 P	2 P	8:30 P	T	T
29	5.5	.094	69.5	W.N.W.	293	8.5	41	0 A				
30	28.5	.190	82.5	S.W.	181	4.0	28	0 A	7:30 P	12 P	.02	½
31	12.0	.104	76.0	W.N.W.	379	11.0	47	5 A	0 A			

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The cold weather which was so pronounced during the first two months of the year continued throughout March although with less severity. The mean temperature was about that of a normal December.

The evidences of the beginning of the Spring season were almost entirely absent. The large amount of snow on the ground at the beginning of the month gradually diminished and the sleighing was practically about over by the last week of the month, after a period of about one hundred days without a break. The last week of the month was marked by some very high winds and low temperature, nearly zero being recorded on the 29th.

While the mean barometer was practically normal the range of pressure was unusually large which resulted in a large wind movement and very many gales, mostly from the northwest quadrant.

The mean temperature was six degrees below the normal and the range of temperature abnormally large. The minimum temperature was nearly ten degrees lower than usual. The thermometer recorded above 50 degrees on only three days of the month.

The mean dew point was about six degrees below the normal and the relative humidity practically normal.

The total precipitation was about one-half the usual amount and occurred mostly as small storms. It was well distributed throughout the month. After the first third of the month there was very little snow.

The amount of sunshine was slightly more than the normal.

J. E. OSTRANDER, Meteorologist.

G. E. LINDSKOG, Observer.

BULLETIN No. 412. APRIL, 1923

Meteorological Observations

AT THE

MASSACHUSETTS

AGRICULTURAL EXPERIMENT

STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.29, 2d, 1A
Minimum reduced to freezing,	29.04, 30th, 4A
Reduced maximum reading	30.61, 2d, 1A
Reduced minimum reading,	29.34, 30th, 4A
Mean semi-daily reduced	29.956
Monthly range	1.27

Air Temperature. In Degrees Fahr.

Highest	86.0, 21st, 4P
Lowest	8.5, 1st, 6A
Mean hourly	45.4
Mean of means of max. and min.	45.9
Mean sensible (wet bulb)	39.4
Monthly range	77.5
Highest mean daily	72.3, 21st
Lowest mean daily	18.7, 1st
Mean maximum	58.2
Mean minimum	33.6
Mean daily range	24.1
Greatest daily range	44.0, 20th, 27th
Least daily range	7.0, 5th

Humidity.

Mean dew point	32.4
Mean force of vapor	.314
Mean relative humidity	65.3

Precipitation. In inches.

Total precipitation, in inches	3.19
Total snow, in inches	Trace
Number of days on which .01 inch or more rain fell	10
Frosts after the 15th, 18th	

*Temperature in ground shelter.

**Reduced to freezing and sea-level.

Wind.

Total movement	6093m
Greatest daily movement	353m, 24th
Least daily movement	88m, 10th
Mean daily movement	203m
Mean hourly velocity	8.5m

Maximum pressure per square foot, 22.5 lbs = 67m per hour, 29th, 1A., S.S.W.

Maximum velocity for 5 minutes, 36 m per hour, 29th, 1A., S.S.W.

Prevailing direction, West Southwest.

Summary.

North Northwest	13 per cent
West Northwest	13 " "
Northwest	10 " "
South Southwest	17 " "
North	10 " "
West	10 " "
Other directions	27 " "

Weather.

Mean cloudiness observed	38 per cent
Total cloudiness recorded by the Sun Thermometer	152hours = 38 per cent.
Number of clear days	11
Number of fair days	15
Number of cloudy days	4

Bright Sunshine.

Number hours recorded, 250 = 62 per cent.

Rain, 3d, 4th, 5th, 8th, 15 th, 16th , 22d, 23d, 24th, 28th, 29th, 30th.

Snow, 13th.

Thunder and Lightning, 5th, 28th.

Hail, 15th, 16th.

Gales. 35 or more miles per hour, 39m 2d, S.S.W.; 39m, 6th, N.W.; 40m, 8th, S.S.W.; 36m, 9th, N.N.W.; 45m; 11th, S.W.; 35m, 12th, N.W. ; 39m, 22d, W.N.W.; 39m, 23d, N.; 52m. 24th, N.; 39m. 25th, S.S.W.; 67m. 29th, S.S-W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.60	30.34	30.573	31.5	4:30 P	8.5	6 A	20.0	18.7	15.3	11.6
2	30.61	30.32	30.472	47.0	3 P	15.0	6 A	31.0	31.2	29.0	8.6
3	30.34	29.98	30.138	62.5	3:30 P	34.0	0 A	48 3	48.5	43.0	9 0
4	29.98	29.92	29.945	67.5	3 P	47.0	6 A	57.3	56 0	52.5	6.0
5	29.92	29.63	29.734	45.0	2:30 P	38.0	12 P	41.5	42.6	39.3	0.0
6	30.05	29.59	29.844	58.0	4:30 P	36 5	5 A	47.3	45.2	41.5	10.7
7	30.10	29.90	30.027	72.0	3:30 P	33.0	6 A	52.5	51.8	42.3	10.9
8	29 90	29.53	29.688	58.0	11:30 A	33.5	12 P	45.7	47.8	39.5	1.4
9	30.17	29.81	30.067	48.0	4 P	30.0	5 A	39.0	36 8	31.7	11.2
10	30.38	30.17	30.350	50.0	2 P	25 5	5:30 A	37.7	36 3	32.0	8.6
11	30 38	30.05	30.218	62.0	2 P	34.5	0 A	48.3	46.6	42.0	7.5
12	30.34	30.09	30.220	55.5	3:30 P	28.5	5 A	42.0	40 1	33.0	11.8
13	30.10	30.02	30.048	54.5	1:30 P	31 0	5 A	42 7	41.2	32.7	8.3
14	30.29	30.10	30.256	49.0	4 P	24.5	0 A	36.7	35.3	27.0	10 8
15	30.38	30.10	30.288	49.0	1:30 P	21.0	5:30 A	35.0	36.1	30.3	7.1
16	30.10	29.83	29.922	54.5	3:30 P	32.0	5 A	43.3	39.4	34.5	4.4
17	29.99	29.93	29.978	50.0	2 P	32 0	12 P	41.0	39.5	33 3	7.8
18	29.97	29.75	29.816	48.0	5:30 P	25.0	6 A	36 5	38.3	35 0	10.7
19	29.93	29.80	29.872	49.5	0:30 P	29.5	4:30 A	39.5	39.5	32.7	9.7
20	29.80	29.62	29.680	77.0	4 P	33.0	6 A	55.0	57 7	48.7	11.3
21	29.74	29.56	29.662	86.0	4 P	58.0	2 A	72.0	72.3	55.3	11.2
22	29.56	29.48	29.524	72.5	1:30 P	53.5	6 A	63.0	62.1	53 0	8.0
23	29.93	29.51	29.804	55.0	0 A	37.5	12 P	46.3	45.0	38.3	6.1
24	29.93	29.74	29.856	54.0	3 P	32.0	5:30 A	43.0	43.5	39.7	7.3
25	30.01	29.80	29.922	54 0	2 P	36 0	4:30 A	45.0	46.3	41.7	10.5
26	30.05	29.93	29.997	71.0	4:30 P	30 0	6 A	50.5	51.7	46.5	13.0
27	30.04	29.86	29.974	77.5	3:30 P	33.5	5:30 A	55.5	55 5	43.2	11.4
28	29.94	29.49	29.762	58.5	12 P	41.0	7:30 A	49.7	48.0	49.0	0.0
29	29.52	29.39	29.474	68.0	1:30 P	52.5	12 P	60.3	59.5	54.0	7.4
30	29.79	29.34	29.582	60.0	12 M	41.0	12 P	50.5	50.7	45.7	7.8

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.	Snow.
1	7 5	.098	62.5	W.N W.	215	2.0	20	10 A				
2	25 5	.174	80 5	S.S W.	260	7.5	39	5 P				
3	37 5	.336	66.5	S.S.W.	345	5.5	33	7 P	8 P	11 P	.01	
4	51.5	.428	89 0	S.S.W.	195	2 5	22	1 A	10 P	12 P	.01	
5	38.0	.251	90.0	N. E-.	109	1.5	17	6 A	0 A	10 P	.79	
6	36.0	.308	69.5	N.N.W.	221	7.5	39	11 A				
7	31.5	.371	50.0	S.S.W.	150	4.0	28	6 P				
8	32.0	.305	60.0	S.W.	328	8.0	40	10 A	10:30A	6 P	.06	
9	25.5	.204	68.0	N.N.W.	257	6.5	36	2 A				
10	27.0	.206	73.0	N.W.	97	2.0	20	4 P				
11	38.0	.308	75.5	S.S.W.	282	10.0	45	11 P				
12	23.0	.238	55.5	W.N.W.	228	6.0	35	1 A				
13	16.5	.250	41.0	N.W.	181	4.0	28	9 P				
14	9.5	.195	36.0	N.	232	4.0	28	1 A				
15	20.5	.206	59.0	S.E.	111	3.0	24	3 P	4 P	12 P	.04	T
16	29.5	.232	75.0	N.N.W.	88	1.5	17	6 P	0 A	6 A	.03	
17	25.0	.227	61.5	W. N.W.	191	3.0	24	12 M				
18	28.0	.237	66.0	N.N.W	94	1.5	17	3 P				
19	21.0	.236	48.5	N.W.	184	3.5	26	9 A				
20	42.0	.480	60.0	W.	162	4.0	28	12 M				
21	46.5	.694	45.5	W.	202	5.5	33	11 A				
22	46.0	.554	61.0	W.N.W.	272	7.5	39	4 P	5:30 P	7 P	T	
23	34.5	.253	80.0	N.N.E.	242	7.5	39	3 P	4 A	5:30 P	.03	
24	34 0	.286	70.0	N.	353	13.5	52	9 A	4:30 P	8 P	T	
25	35.5	.318	65.5	N.N.E.	303	7.5	39	2 P				
26	39.0	.413	58.0	N.	148	3 5	26	9 A				
27	32.0	.394	50.5	S.	111	4.5	30	6 P				
28	48.0	.370	94.5	S.	112	3.0	24	12 P	5 A	12 P	1.26	
29	50.5	.489	74.5	W.S.W.	260	22.5	67	1 A	0 A	12 P	.86	
30	41.0	.362	72.5	W.	160	5 0	32	5 P	0 A	5 P	.10	

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month, while not far from normal as far as mean values are concerned, had a number of unusual features. Winter temperature on the 1st and Summer temperature on 21st. A very light precipitation up to the 28th and then a very heavy rain making the total for the month more than the normal. A large wind movement and numerous gales were recorded and yet the maximum daily movement was not specially large. The seasonal progress was rather slow and at the close of the month conditions were about two weeks behind normal.

The records of the several weather elements compared with their respective normals show the following features : The mean barometer was rather low and the range larger than usual. The last half of the month the low pressure was especially marked culminating in the lowest record for the month on the 30th.

The mean temperature was about a degree lower than usual and the range was nearly 20 degrees more than normal. This was due to the extremely low minimum on the 1st which was 13 degrees lower than usual and the lowest record for this month on our records. The maximum temperature was the highest since 1915.

The mean dew point and relative humidity were both rather low.

The precipitation record showed but one rain of any note up to the 28th. On the 28th-29th an exceptionally heavy storm occurred bringing the total for the month slightly above the normal.

The total wind movement was very large and many gales were registered. Two were over 50 miles per hour.

The amount of sunshine was very large and only a few cloudy days were noted.

J. E. OSTRANDER, Meteorologist.

G. E. LINDSKOG, Observer.

Massachusetts Agricultural College,
AMHERST, MASS.

BULLETIN No. 413. MAY, 1923

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	29.99, 3d, 8A; 24th, 8A.
Minimum reduced to freezing,	29.15, 9th. 3P
Reduced maximum reading,	30.29, 3d, 8A; 24th, 8A.
Reduced minimum reading,	29.44, 9th, 3P
Mean semi-daily reduced	29.950
Monthly range	.85

Air Temperature. In Degrees Fahr.

Highest	86.5, 25th, 4P; 26th, 3:30P
Lowest	29.0, 11th, 5:30A
Mean hourly	56.8
Mean of means of max. and min.	56.4
Mean sensible (wet bulb)	50.2
Monthly range	57.5
Highest mean daily	71.9, 26th
Lowest mean daily	41.0, 10th
Mean maximum	70.2
Mean minimum	42.5
Mean daily range	27.7
Greatest daily range	43.0, 7th
Least daily range	6.0, 21st

Humidity.

Mean dew point	44.3
Mean force of vapor	.470
Mean relative humidity	66.9

Precipitation. In inches.

Total precipitation, in inches	3.26
Number of days on which .01 inch or more rain fell	7

Wind.

Total movement	4519m
Greatest daily movement	281m, 10th
Least daily movement	51m, 19th
Mean daily movement	146m
Mean hourly velocity	6.1m

Maximum pressure per square foot, 8.0 lbs= 40m per hour, 4th, 10A., N.

Maximum velocity for 5 minutes, 24m per hour, 4th, 10A., N.

Prevailing direction, West Northwest.

Summary.

North Northwest	23 per cent
South Southwest	16 " "
Northwest	13 " "
West	10 " "
Other directions	38 " "

Weather.

Mean cloudiness observed	30 per cent
Total cloudiness recorded by the Sun Thermometer	128 hours = 28 per cent.
Number of clear days	20
Number of fair days	5
Number of cloudy days	6

Bright Sunshine.

Number hours recorded, 325 = 72 per cent.

Rain, 5th, 9th, 11th, 12th, 13th, 15th, 16th, 17th, 21st.

Thunder and Lightning, none.

Frosts, 11th, 24th.

Gales, 35 or more miles per hour, 40m 4th, N.; 37m, 8th, S.S.W.; 37m, 9th, S.S.W.; 36m, 11th, S.S.W.; 36m, 26th, W.

*Temperature in ground shelter.

**Reduced to freezingand sea-level.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean, Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.04	29.79	29.927	57.5	4 P	36.0	5:30 A	46.7	47.2	43 5	10.0
2	30.24	30.04	30.148	61.0	5 P	33 0	5:30 A	47.0	48.4	47.3	12.9
3	30.29	30.08	30.190	68.0	4:30 P	37.5	6 A	52.7	53.7	50.3	13 2
4	30.08	29.82	29.903	76 0	4 P	42.5	5 A	59.3	60.4	55.3	12.7
5	29.90	29.71	29.822	78.0	3 P	44.0	6 A	61.0	60.8	56.3	11.0
6	29 90	29.79	29.868	73.5	2:30 P	48.5	5:30 A	61.0	58.4	48.0	13.1
7	29.93	29.81	29 884	79.0	4:30 P	36 0	5 A	57 5	58.8	51.0	13.4
8	29.84	29.73	29.792	75.5	1:30 P	45 5	6 A	60.5	60.8	52.0	11.8
9	29.73	29.44	29.534	60.0	0:30 P	40.5	12 P	50.3	54.0	47.5	3.3
10	29.94	29.58	29.757	50.0	2 P	35.5	12 P	42.7	41.0	37.3	2.5
11	30.04	29.77	29.950	62.0	4 P	29 0	5:30 A	45.5	46.4	43.0	12.6
12	29.77	29.47	29.547	56.5	5:30 P	46.0	6 A	51.3	51.0	49.0	0.1
13	30.07	29.55	29.864	65.5	5 P	47.0	6 A	56.3	54.3	50.3	9 1
14	30 26	30.07	30.242	73.5	5 P	35.5	5 A	54.5	56.7	47.3	13.7
15	30 25	29.94	30.122	57.5	1 P	44.0	5:30 A	50.7	51.8	49.0	3 5
16	29.94	29.60	29.659	70.0	4:30 P	50.0	4 A	60 0	60.0	60.7	1.8
17	29.91	29.62	29.779	69.5	3 P	51.0	12 P	60 3	60.9	52.5	10.4
18	30.11	29.91	30.069	70 0	3 P	43.0	4 A	56 5	57.1	47.3	13.5
19	30 15	30.02	30.090	78.0	4:30 P	44.0	4:30 A	61.0	60.6	51.5	11.7
20	30.06	29.93	30 006	77 0	1:30 P	41.5	5 A	59.3	60.3	52.5	12.2
21	29.94	29.83	29.861	56 0	5 P	50.0	5 A	53.0	54.0	52.7	0.0
22	30.14	29.90	30.028	70.0	5 P	51 0	12 P	60.5	59.8	53 0	12.2
23	30 27	30.12	30.248	69.0	4 P	42.5	5:30 A	55.7	56.1	45.7	13 7
24	30.29	30.10	30.198	76.5	4 P	34 0	5:30 A	55 3	55.7	48.0	13 8
25	30.11	29.91	29.988	86.5	4 P	44.0	5 A	65.3	68.4	60.7	13.9
26	29.91	29.72	29.819	86.5	3:30 P	52.0	5:30 A	69 3	71 9	58.0	13.8
27	30.05	29 82	29.966	72.5	5 P	50 0	12 P	61.3	60.4	47.7	13.5
28	30.09	29.94	30.014	76.5	3:30 P	38.0	5 A	57.3	57.6	50.0	12.2
29	30.01	29.92	29.946	76.5	4 P	46.5	5 A	61.5	59 7	52.7	11.3
30	30.14	29.95	30.061	76.0	5 P	39.0	5 A	57.5	58 0	46.0	14.1
31	30 26	30.09	30.180	73.0	5 P	40.5	5 A	56.7	56.9	50.0	13.7

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	40.0	.322	75.5	N.W.	107	3.0	24	4 P				
2	42.0	.383	71 5	N.N.E.	132	4.0	28	11 A				
3	46.0	.436	72.0	N.N.E.	212	4.0	28	2 P				
4	48 5	.580	59.5	N.N.E.	217	8.0	40	10 A				
5	53 5	.512	82 0	S.S.W.	118	2.0	20	6 P	6 P	7 P	T	
6	40 0	.441	56.5	N.N.E.	194	4 5	30	9 A				
7	44.0	.484	62.0	N.W.	67	0.5	10	10 A				
8	45.5	.488	64.0	S.S W.	219	7.0	37	3 P				
9	42.0	.380	75.5	S.W.	269	7.0	37	2 P	0 A	1 P	1.34	
10	33.5	.244	79.5	W.	281	5.5	33	3 P				
11	38 5	.329	72.0	S.W.	176	6.5	36	4 P	8 P	12 P	T	
12	47.0	.376	87.0	S.S.W.	127	3.0	24	10 P	0 A	12 P	.50	
13	47.0	.418	79 0	N.N.W	75	0.5	10	9 P	0 A	7 A	.05	
14	38.0	.440	53.5	W.	85	1.0	14	9 A				
15	46.0	.388	81.5	S.S.W.	103	2.5	22	4 P	9 A	12 P	.07	
16	60.0	.558	93.5	S.S.W.	166	5.0	32	7 P	0 A	12 P	.08	
17	47.5	.502	65.0	W.S.W.	227	4.0	28	7 P	0 A	3 A	.04	
18	37.5	.448	51.5	N.W.	206	3.0	24	11 A				
19	45.0	.506	59 5	N.N.W.	51	0.5	10	9 P				
20	47.0	.501	64.5	S.	147	4.0	28	4 P				
21	51.5	.416	92.5	S.E.	133	2.0	20	8 A	4:30A	12 P	1.18	
22	47.5	.508	67.0	N.	171	2.5	22	6 A				
23	33.0	.456	42.5	N.N.E.	133	1.5	17	4 P				
24	39.5	.456	55 5	N.W.	76	1.0	14	10 A				
25	54.0	.833	59.0	W.S.W.	92	1.5	17	2 P				
26	48.0	.732	47.5	W.	182	6 5	36	3 P				
27	38.5	.459	51.5	N.N.E.	188	2 5	22	1 P				
28	45.5	.452	69.5	S S E.	59	0.5	10	6 P				
29	48.5	.473	75.0	E.N.E.	104	1.0	14	5 P				
30	33.5	.469	42.0	N.N.E.	130	3 0	24	4 P				
31	44.0	.451	66.0	N.	72	0.5	10	8 P				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The season's progress during the month was nearly normal so that the backwardness noted when the month opened continued throughout the month without much change. While the amount of bright sunshine was unusually large and the number of cloudy days small, the cold nights lowered the temperture so that the month was slightly colder than usual. Vegetation has made very uneven progress. There was but little frost during the month. Not a single thunder storm was noted.

The records of the several weather elements show the following features: The barometer records were generally normal, although the pressure was rather low during the second week of the month. The total wind movement was slightly less than the average and the number of gales small. The wind direction was rather variable.

The mean temperature was less than a degree below the normal although the general impression was that the month was much colder than usual. The maximum and minimum temperatures were both near their normal values.

The mean dew point and relative humidity were both comparatively low.

The total precipitation was about one-half inch less than the normal. Nearly the whole amount fell during three well defined storms. The last third of the month was without rain.

The amount of sunshine was nearly fifty per cent more than usual.

J. E. OSTRANDER, Meteorologist.

G. E. LINDSKOG, Observer.

Massachusetts Agricultural College.
AMHERST, MASS.

BULLETIN No. 414. JUNE, 1923

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	29.90, 18th, 8A; 30th, 12P.
Minimum reduced to freezing,	29.04, 26th. 7P
Reduced maximum reading,	30.19. 18th, 8A; 30th, 12P.
Reduced minimum reading,	29.32, 26th, 7P
Mean semi-daily reduced	29.852
Monthly range	0.87

Air Temperature. In Degrees Fahr.

Highest	97 0, 19th, 3P
Lowest	42.0, 13th, 6A
Mean hourly	68.1
Mean of means of max. and min.	67.9
Mean sensible (wet bulb)	60.5
Monthly range	55 0
Highest mean daily	81.7, 20th
Lowest mean daily	53.7, 8th
Mean maximum	81.2
Mean minimum	54.6
Mean daily range	26.6
Greatest daily range	40.5, 19th
Least daily range	7.5, 8th

Humidity.

Mean dew point	56.3
Mean force of vapor	.679
Mean relative humidity	70.2

Precipitation. In inches.

Total precipitation, in inches	2.24
Number of days on which .01 inch or more rain fell	10

Wind.

Total movement	3314m
Greatest daily movement	333m, 27th
Least daily movement	25m, 30th
Mean daily movement	110m
Mean hourly velocity	4.6m

Maximum pressure per square foot, 7.0 lbs= 37m per hour, 9th, 12M., N.

Maximum velocity for 5 minutes, 27m per hour, 27th, 12M., W.

Prevailing direction, West.

Summary.

Southwest	17 per cent
North	13 " "
South	13 " "
North Northeast	10 " "
West	10 " "
Northwest	10 " "
Other directions	27 " "

Weather.

Mean cloudiness observed	38 per cent
Total cloudiness recorded by the Sun Thermometer	97 hours = 21 per cent.
Number of clear days	19
Number of fair days	10
Number of cloudy days	1

Bright Sunshine.

Number hours recorded, 360 = 79 per cent.

Rain, 3d, 4th, 6th, 7th, 8th, 9th, 15th, 23d, 26th, 28th.

Thunder and Lightning, 4th, 5th, 6th, 24th, 26th,

Gales, 35 or more miles per hour, 37m 9th, N.; 36m, 27th, W.

*Temperature in ground shelter.

**Reduced to freezingand sea-level.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.11	29.86	29.979	85.0	3 P	46.0	5 A	65.5	67.3	60.5	12.9
2	29.94	29.85	29.886	85.5	3 P	54.5	5:30 A	70.0	70.3	60.0	12.3
3	30.04	29.94	29.979	72.5	6 P	45.0	5 A	58.7	61.0	58.5	10 9
4	29.95	29.83	29.903	90.0	1:30 P	55.0	5:30 A	72.5	69.7	64 0	11.6
5	29.85	29.73	29.792	94.0	3 P	65.0	0 A	79 5	79.8	71.5	13.1
6	29 90	29.8c	29.817	85.0	1:30 P	69.0	12 P	77 0	75.0	68.0	10.4
7	29.98	29.90	29 949	72.5	1 P	56 5	12 P	64 5	66.0	60.5	7.2
8	29.90	29.75	29.818	56.5	c A	49 0	12 P	52.7	53.7	50.5	0.4
9	29.90	29.68	29.794	65.0	5 P	46 5	6 A	55.7	53.8	49.5	8.2
10	29.91	29.83	29.878	73.5	6 P	46.5	5:30 A	60.0	61.6	54.0	13.9
11	29.91	29.75	29.804	76.5	2 P	44.0	5 A	60.3	63.9	56.7	13.7
12	29.92	29.80	29.905	75.0	3 P	47.5	5 A	61.3	62.2	54.7	13.1
13	29.94	29.80	29.877	77.0	3 P	42.0	6 A	59.5	60.0	51.0	12.9
14	29 81	29.73	29.772	81.5	3 P	45.5	6 A	63.5	65.0	56 7	13.8
15	29 93	29.80	29.872	74.5	4 P	54.0	10 P	64.3	61.2	53.5	11.0
16	29.99	29.90	29.934	76.5	3 P	48.0	6:30 A	62 3	62.6	51.7	13.2
17	30.16	29.99	30.082	80.5	2 P	45.5	5 A	63.0	65.6	57.7	14.2
18	30.19	30.03	30.128	87.0	3 P	50.0	5 A	68 5	69.8	61.5	14.2
19	30 09	29.92	29 994	97.0	3 P	56 5	5 A	76.7	77.6	67.3	14.1
20	29.92	29.81	29 862	94.5	4 P	63.0	5 A	78.7	81.7	72.7	14 3
21	30.01	29.82	29.905	92 5	3 P	67.5	5 A	80.0	81.5	70.0	14.3
22	30.12	30.01	30.105	86 5	4 P	62.0	12 P	74.3	72.7	63 5	13 5
23	30 12	29.85	29.953	75.5	5 P	59.5	6:30 A	67.5	66 0	61.7	10.3
24	29.85	29.62	29.698	88.0	3 P	65.0	5 A	76.5	75.0	69.5	13 4
25	29.62	29.53	29.552	92.5	4 P	67 0	5 A	79.7	80.6	69.7	14.4
26	29.56	29.32	29.424	91.0	2 P	67.5	10:30 P	79.3	76.4	68.0	10.1
27	29.60	29.33	29.441	76.5	3:30 P	64 5	4 A	70.5	69.2	58.3	12.5
28	29.65	29.59	29 628	80.0	12 M	55 c	5 A	67.5	67.7	61.5	11.4
29	29.92	29.57	29.725	73 0	1:30 P	53.0	12 P.	63.0	63 2	57.7	10 4
30	30.19	29.92	30.090	80.0	5:30 P	46.5	5 A	63.3	62.6	56.0	14.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	57.5	.678	73.5	S.W.	148	3.0	24	1 P				
2	54.5	.702	61.0	N.W.	93	2.0	20	3 P				
3	55.0	.589	74.0	S.	69	0.0	—		11 A	2 P	.13	
4	61.0	.706	76.5	S.	115	3 5	26	6 P	5 P	6 P	.10	
5	67 5	1.010	66 5	S.S.W.	195	2.0	20	3 P				
6	64 5	.870	61.5	S.W.	102	0.5	10	3 P	9 A	6 P	.03	
7	58.0	.609	82.0	N.E.	71	0.0	—		1 P	12 P	1.02	
8	48.0	.399	84.5	E N.E.	81	0.0	—		0 A	12 P	.34	
9	46.0	.401	81.0	N.N.E.	161	7.0	37	12 M	0 A	8 A	.10	
10	45.5	.588	52.5	N.	154	5.5	33	11 A				
11	48 5	665	51.5	W.	106	1.0	14	1 P				
12	47.5	.597	54.5	E.	68	0.0	—					
13	45.5	.462	69 5	S.S.W.	89	1.0	14	3 P				
14	52.0	.586	67.0	W.	95	0.5	10	4 P				
15	50.0	.480	75 0	E.N.E.	77	0.0	—		2:30 A	3 A	.01	
16	43.5	.534	53 0	N.	100	2.0	20	1 P				
17	53.0	.596	69 5	N.N.E.	80	1.5	17	1 P				
18	57.0	.700	66.5	S.W.	87	1.0	14	6 P				
19	63.0	.866	67.5	S S E.	122	0.5	10	2 P				
20	69.0	1 115	63.5	N.W.	136	1.5	17	12 M				
21	65.0	.991	63.0	N.	99	1.0	14	2 P				
22	60.5	698	76.5	N.W.	87	1.0	14	9 P				
23	59.5	.608	86.0	S.	71	0.0	—		5:30 A	12 P	.29	
24	68.0	.789	87 5	S.W.	52	1.0	14	5 P				
25	65.0	.984	64.0	W.	138	2 0	20	1 P				
26	65.0	.822	77.5	S.W.	119	0.5	10	10 A	3:30 P	6:30 P	.02	
27	53.0	.621	65.5	W.N.W.	333	6.5	36	10 A				
28	58 5	.646	77.5	S.	110	1.5	17	11 A	3 P	11 P	.20	
29	56.0	.526	86 0	N.	131	1.5	17	3 P				
30	51.5	.542	72.0	N.N.E.	25	0.0	—					

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was generally pleasant with very little cloudiness. The precipation was rather light and amcunted to very little after the first third of the month. The second full week of the month was rather cool with the minimum temperature in the forties most of the days. The following week was much the warmest part of the month with the maximum temperature in the eighties. The last week of the month was marked by a very low barometer about the whole period. The wind direction was more variable than usual and the total movement rather small. Vegetation made good progress but rain was much needed when the month closed.

The mean barometer was very low and the range a little greater than usual. Only two gales were noted and they were of little severity.

The mean temperature was about two degrees higher than the normal and the maximum and minimum records were both well above their normals. The low relative humidity made the hot days less oppressive than usual. The mean dew-point was about normal.

The total precipation was about one inch less than the normal and more than one-half of it occurred during a single storm on the 7th-9th. There were a few thunder storms but they were of but little severity in this immediate vicinity.

The amount of sunshine was about 100 hours more than the normal and only one cloudy day was recorded.

J. E. OSTRANDER, Meteorologist.

H. H. SHEPARD, Observer.

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Massachusetts Agricultural College,
AMHERST, MASS.

BULLETIN No. 415. JULY, 1923

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing	30.11, 2nd 8A.
Minimum reduced to freezing	29.38, 25th. 4P.
Reduced maximum reading	30.40, 2d 8A.
Reduced minimum reading	29.67, 25th, 4P
Mean semi-daily reduced	30.001
Monthly range	0.73

Air Temperature. In Degrees Fahr.

Highest	94.0, 20th, 3P
Lowest	43.5, 24th, 5A
Mean hourly	68.4
Mean of means of max. and min.	68.5
Mean sensible (wet bulb)	62.1
Monthly range	50.5
Highest mean daily	77.6, 21th
Lowest mean daily	61.8, 31st
Mean maximum	81.0
Mean minimum	55.9
Mean daily range	25.1
Greatest daily range	39.5, 20th
Least daily range	5.5, 3rd

Humidity.

Mean dew point	58.4
Mean force of vapor	.672
Mean relative humidity	75.2

Precipitation. In inches.

Total precipitation, in inches	1.77
Number of days on which .01 inch or more rain fell	9

Wind.

Total movement	2852m
Greatest daily movement	158m, 26th
Least daily movement	24m, 18th
Mean daily movement	92m
Mean hourly velocity	3.8m

Maximum pressure per square foot, 7.0 lbs= 37m per hour, 27th, 6 P., W.

Maximum velocity for 5 minutes, 18m per hour, 27th, 6 P., W.

Prevailing direction, West Northwest.

Summary.

North Northwest	16 per cent
South Southwest	13 " "
West	13 " "
Northweast	10 " "
South	10 " "
Other directions	38 " "

Weather.

Mean cloudiness observed	42 per cent
Total cloudiness recorded by the Sun Thermometer	104 hours = 23 per cent.
Number of clear days	22
Number of fair days	5
Number of cloudy days	4

Bright Sunshine.

Number hours recorded, 358 = 77 per cent.

Rain, 3d, 4th, 6th, 14th, 15th, 16th, 24th, 25th, 27th, 28th, 29th, 31st.

Thunder and Lightning, 14th, 15th,

Gales, 35 or more miles per hour, 37m 27th W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.37	30.19	30.302	83.0	3 P	47.5	6 A	65.3	67.5	59 5	14.6
2	30.40	30.31	30.366	83 0	3 P	54.5	5 A	68.7	69.0	63.3	13.0
3	30.31	30.18	30.250	66.5	4 P	61.0	5:30 A	63.7	63.8	62.3	10 0
4	30.18	30.07	30.136	77.0	4 P	60.0	5:30 A	68.5	66.8	64.7	9.8
5	30 12	30.05	30.088	85.5	2 P	55.0	5:30 A	70.3	70.3	63.3	14.3
6	30.05	29.87	29.952	78.5	5:30 P	56.0	12 P	67 3	64.8	59.0	9.3
7	30.04	29.92	29.980	80.0	2:30 P	50 0	5 A	65 0	65.3	56.3	14.2
8	30.08	30.01	30.051	80.5	5 P	54.0	5 A	67.3	66.2	57.0	14.5
9	30.10	29.86	29.982	86.5	3 P	50.5	5:30 A	68 5	69.8	60.3	14 0
10	29.86	29.73	29.782	88.5	3 P	63.5	5 A	76.0	74.6	67.5	12.6
11	29.90	29.81	29.872	88.0	2:30 P	55.5	5:30 A	71.7	72.8	63.5	14.3
12	29.97	29.87	29.943	88.0	3 P	52.5	6 A	70.3	71.5	62.7	14.3
13	29.96	29.88	29.946	89.5	2:30 P	55.5	6 A	72.5	73.5	64.3	14.3
14	29.97	29.91	29.960	89.0	2:30 P	59.0	5:30 A	74.0	72.4	65.7	13.9
15	29 93	29.85	29.897	74.0	2:30 P	63.5	4 A	68.7	69.0	66.5	10.0
16	29.96	29.78	29.853	82.0	2 P	63.0	12 P	72 5	71.6	66.5	13 1
17	30.12	29.96	30.069	82.5	2:30 P	55.0	6 A	68.7	69.0	62.5	14.1
18	30.17	30.12	30.150	85 5	3 P	52.5	6 A	69 0	69.4	63.0	14 2
19	30.15	30.00	30.086	87 5	6:30 P	54.5	7 A	71.0	71.5	61.0	14.1
20	30.00	29.79	29 860	94 0	3 P	54.5	6 A	74.3	77.5	66 7	14 6
21	29.78	29.70	29.770	92.5	4 P	65 0	6 A	78.7	77.6	70.5	14.3
22	29.98	29.79	29.898	78 0	4 P	6 05	12 P	69.3	68 2	58.3	13 7
23	30 04	29.98	30.026	77.0	3:30 P	51.0	12 P	64.0	63 3	55.3	13 9
24	30'02	29.82	29.974	80.5	2 P	43.5	5 A	62.0	62.1	58.0	13.2
25	29.82	29.67	29.696	76.0	5 P	57 0	4 A	66 5	63 0	61.0	11.3
26	30.04	29.79	29.992	80.0	3 P	53 0	6 A	66 5	65 3	59.0	14.2
27	30.09	29 98	30.040	83.5	4 P	50 5	5:30 A	67.0	68.0	61.5	13 8
28	30.02	29.77	29.840	72 0	6 P	58 5	6 A	65.3	65.8	65.5	00.0
29	30.03	29.80	29.889	68 0	4 P	58.0	6 A	63.0	63 6	60.3	00 0
30	30.20	30.03	30.180	70.5	4:30 P	58.0	3 A	64 3	65 6	61.7	00.0
31	30.22	30 14	30.188	65.0	2 P	59 0	7 A	62.0	618	58.0	00.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	54.0	.656	64.0	W.	46	0.0	—					
2	53.5	.637	63.5	W.N.W.	62	0.0	—					
3	61.5	.587	92.5	S.S.W.	83	0.0	—		7:30 A	11 A	.07	
4	64.0	.648	92.0	S.S.W.	83	1.5	17	5 P	1:30 P	6:30 P	T	
5	59.5	.700	74.0	S.W.	72	0.5	10	2 P				
6	56.5	.572	81.0	N.W.	68	1.5	17	8 P	4:30 A	10:30A	.25	
7	50.5	.594	62.5	N.N.E.	122	1.0	14	1 P				
8	52.0	.588	68.0	N.	115	1.0	14	10 A				
9	55.0	.687	66.0	E S.E.	61	0.5	10	1 P				
10	64.5	.834	73.0	W.	138	0.5	10	12 P				
11	58 5	768	65.5	N.	82	0.0	—					
12	57.5	.746	64.5	W.	69	1.0	14	8 P				
13	60.5	.758	69 5	S.E.	92	1.0	14	8 P				
14	63.0	.733	80.0	S.	108	1.5	17	3 P	2:30 P	3 P	T	
15	65.0	.720	85 5	S.S.W.	90	0.0	—		2:30 P	5 P	.03	
16	64.5	.755	79.0	W.N.W.	134	2.5	22	2 P	3:30 A	10 A	.02	
17	59.0	.700	71.5	N.N.E.	103	4.0	28	1 P				
18	59.0	.702	72.5	N.W.	24	0.0	—					
19	57.0	.662	74.5	S.	68	0.0	—					
20	60.5	.938	59.0	W.	92	1.0	14	4 P				
21	68 0	.893	77.5	N.W.	99	1.0	14	3 P				
22	51.5	648	60.5	N.N.E.	115	0 5	10	9 P				
23	50.0	.552	65.0	N.N.E.	132	1.0	14	4 P				
24	54.5	.550	78 5	S.W.	118	2 5	22	6 P	9 P	12 P	.08	
25	59.5	.569	90.5	N.E.	123	0.0	—		0 A	8 P	.14	
26	55.5	.590	75.5	N.N.W.	158	4 0	28	4 P				
27	57.5	.662	75.0	S.S.W.	117	7 0	37	6 P	10:30 P	12 P	.04.	
28	65 0	.653	95.0	S.	71	0.0	—		0 A	4 P	1.04.	
29	59.0	.562	88.5	N.N.E.	90	0.0	—		1:3 A	11 A	.11.*	
30	59.0	.623	82.0	S.E.	45	0 0	—					
31	56.0	.530	85.5	N E.	75	0.0	—		3 P	3:30 P	T	

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The outstanding feature of the weather for the month was the absence of any appreciable precipitation until nearly the end of the month. Following the light precipitation of June the absence of rain for nearly the whole of July was expecially felt by the growing crops. From the 8th. of June until the 28th. of July only one inch of rain was recorded. The heavy rain near the last of the month did much to remedy the droughty conditions. There was very little thunder and lightning during the month.

The records of the several weather elements compared with their respective normals show the following features of interest : The mean barometer was rather high and the range of pressure practically normal. The total wind movement was about four-fifths of the average value and the direction of wind more variable than usual.

The month was more that two degrees cooler than normal and the maximium temperature was about the average value. The periods of high temperature were very short.

The mean dew-point was three degrees lower than the normal and the relative humidity slightly greater than usual.

The total precipitation was about 40 per cent of the normal amount and two-thirds of it fell during the storm of the 28th-29th.

The amount of sunshine was very large and only four cloudy days were noted.

J. E. OSTRANDER, Meteorologist.
H. H. SHEPARD, Observer.

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Massachusetts Agricultural College,
AMHERST, MASS.

BULLETIN No. 416. AUGUST, 1923

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	29.91, 27th 9A.
Minimum reduced to freezing,	29.19, 22d. 1A.
Reduced maximum reading,	30.20, 29th 9A.
Reduced minimum reading,	29.48, 22d, 1A
Mean semi-daily reduced	29.956
Monthly range	.72

Air Temperature. In Degrees Fahr.

Highest	94.0, 4th, 3P
Lowest	37.5, 24th, 6A
Mean hourly	66.8
Mean of means of max. and min.	67.6
Mean sensible (wet bulb)	59.8
Monthly range	56.5
Highest mean daily	77.5, 5th
Lowest mean daily	56.0, 23d
Mean maximum	82.2
Mean minimum	53.0
Mean daily range	29.2
Greatest daily range	40.5, 10th
Least daily range	11.5, 12th

Humidity.

Mean dew point	56.5
Mean force of vapor	.613
Mean relative humidity	77.0

Precipitation. In inches.

Total precipitation, in inches	2.55
Number of days on which .01 inch or more rain fell	10

Wind.

Total movement	3312m
Greatest daily movement	301m, 22d
Least daily movement	47m, 4th
Mean daily movement	107m
Mean hourly velocity	4.5m

Maximum pressure per square foot, 6.5 lbs = 36m per hour, 21st, 3 P., S.

Maximum velocity for 5 minutes, 24m per hour, 21st, 3 P., S.

Prevailing direction, West, Southwest.

Summary.

West Northwest	10 per cent
Northwest	13 " "
South	10 " "
Southwest	13 " "
South Southwest	32 " "
Other directions	22 " "

Weather.

Mean cloudiness observed	27 per cent
Total cloudiness recorded by the Sun Thermometer	121 hours = 29 per cent.
Number of clear days	12
Number of fair days	17
Number of cloudy days	2

Bright Sunshine.

Number hours recorded, 308 = 71 per cent.

Rain, 3d, 7th, 12th, 13th, 15th, 19th, 21st, 22d, 25th, 28th, 29th.

Thunder and Lightning, 12th, 15th, 19th, 21st, 22d.

Hail, 15th.

Gales, 35 or more miles per hour, 36m, 21st, S.; 35m, 22d, N.W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.15	29.99	30.064	81.0	4 P	57.0	6 A	69 0	66.0	61 0	9.9
2	30.01	29.89	29.966	86.5	4:30 P	57.0	6:30 A	71.7	70.2	64.7	9.5
3	29.90	29.84	29.889	89.5	2 P	68.5	4 A	79.0	75.0	70.0	6.3
4	29.88	29.80	29.844	94 0	3:30 P	63.0	6 A	78.5	76.4	68.3	11.4
5	29.97	29.78	29.802	93.5	4:30 P	67.0	6 A	80.5	77.5	68.7	8.6
6	30.09	29.97	30.045	89.0	3:30 P	62.0	5 A	75.5	74.3	64.3	11.5
7	30.05	29.73	29.860	84.5	3 P	56.5	9 A	70 5	67.9	64.5	7 7
8	30.07	29.87	29.932	82.0	4 P	59.0	12 P	70.5	68.2	60.0	4.6
9	30.14	30.03	30.092	84 0	5 P	45.5	6 A	64.7	64.0	53.3	12 7
10	30.10	30.00	30.056	87 0	4 P	46.5	6 A	66.7	68.0	60 7	12.5
11	29.99	29.91	29.967	91.5	5:30 P	62.5	6:30 A	77.0	75.6	68.5	12 0
12	29 98	29.55	29.717	75.0	6 P	63 5	7:30 A	69 3	68.8	65.7	0.0
13	29 87	29.54	29.656	76.5	11 A	53 0	12 P	64.7	67.5	59 5	10.5
14	29.91	29.77	29.853	82.0	4:30 P	47.5	5:30 A	64 7	65.2	57.3	12 4
15	30.00	29.72	29.806	81.5	4 P	60 5	6 A	71.0	69 5	61 5	12.6
16	30.13	30.00	30.120	77.5	5 P	46.5	6 A	62 0	61 3	53.7	11.5
17	30.14	30.04	30.114	82.5	4:30 P	45 0	6 A	64.3	62.8	53.5	11.3
18	30.08	29.97	29.986	82.0	4:30 P	47.0	6 A	64 5	64.1	54 3	11.9
19	30.00	29.76	29 865	81.5	2:30 P	47.5	5:30 A	64.5	63 3	60.0	8.4
20	30'03	29.88	30.012	76.0	4 P	47.5	6 A	61 7	62.4	53.0	12.8
21	30.03	29 50	29.794	80.0	3 P	46.c	6 A	63.0	66.4	62.0	10.5
22	29.94	29 48	29 814	74 0	0:30 A	49 0	12 P	61.5	59.7	49.0	10 5
23	29.99	29.94	29.983	73 0	3:30 P	40.5	6 A	56 7	56 0	53.5	11 8
24	30.02	29.90	29.977	76 0	3:30 P	37 5	5 A	56.7	57.2	50.0	10.6
25	30.05	29.90	29.965	79.0	2:30 P	52.0	12 P	65.5	64.7	56.0	8 6
26	30.13	30.05	30.116	78 0	2:30 P	44.5	6 A	61.3	60.5	53.5	12.5
27	30.20	30.12	30.178	81.0	1:30 P	43.0	6 A	62 0	62.5	53.5	10.0
28	30.14	29.88	30.034	79.5	2 P	61 0	6 A	70.0	69.6	65.3	5 4
29	30.03	29.87	29.946	78.0	1:30 P	60.0	12 P	69.0	70 9	65.5	9.4
30	30.16	30.03	30.124	84.5	5 P	52.5	6 A	68.5	67.2	60.7	12.1
31	30.19	30.09	30.158	87.0	2:30 P	54.0	4:30 A	70.5	68.4	62.3	8 5

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	58 5	.593	84 5	N.W.	62	1.0	14	5 P				
2	63.0	.688	88 0	S.S.W.	105	2.0	20	6 P				
3	69.0	.801	88 5	S.S.W.	87	1.0	14	4 P	7:30 P	9 P	.01	
4	66.5	.803	81.0	S.S.W.	47	0.0	—					
5	65.5	.847	76.5	N E.	70	0.5	10	4 P				
6	60 0	.760	68 5	E.	98	0.0	—					
7	63.5	.650	92 5	S.	80	0.0	—		6:30 A	9 A	.61	
8	56.0	.616	74 5	E S.E.	108	1.5	17	7 P				
9	47 5	.529	62 0	N.	70	0.0	—					
10	56.0	.672	69 5	S.S.E.	67	1.0	14	6 P				
11	66.0	.745	77.5	S.	77	0.0	—					
12	65.0	.625	94 0	S.W.	87	1.0	14	1 P	6 P	12 P	.31	
13	55.5	.626	73.5	W.N.W.	200	4 5	30	1 P	0 A	1 A	.02	
14	52.5	.553	64.0	S.S.W.	103	3.0	24	6 P				
15	57 5	.799	67.0	S.W.	160	2.0	20	5 P	1 A	2 A	.35	
16	49.5	.492	75.0	N.W.	81	0.0	—					
17	49 5	.500	72 0	S.S.W.	78	1.0	14	7 P				
18	50.0	.515	70.0	S.S W.	98	1.5	17	4 P				
19	57.5	.569	86.0	S.S.W.	149	5.0	32	4 P	4 P	6 P	.26	
20	48.0	.494	68.5	W.N.W.	92	0.0	—					
21	59.0	.650	79 5	S.S.E.	211	6 5	36	3 P	11:30 P	12 P	.10	
22	42 5	.438	63.5	N.W.	301	6 0	35	2 P	0 A	2 A	.25	
23	50.5	.474	77.5	N.W.	63	0.0	—					
24	46 5	.426	79.0	S.	66	1.5	17	6 P				
25	51.5	.535	73.5	W.N.W.	130	1.0	14	2 P	5 A	5:30 A	T	
26	48.5	.505	69.0	S.W.	51	0 0	—					
27	49.5	.500	73.5	S.S.W.	83	1.5	17	5 P				
28	63.5	.680	89.5	S S.W.	205	5 5	33	1 P	3 A	12 P	.56	
29	63 5	.701	85.5	S.W.	147	1.0	14	1 A	0 A	8 A	.08	
30	57.0	.602	79.5	N.	58	0.0	—					
31	60.0	.630	85 5	S.S.W.	78	1.0	14	9 P				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather for the month was more pleasant than usual, owing to the general absence of sultry days. The rainfall was much below the normal and most of it occured in rather small storms. The thunder storms were of only moderate severity.

The first third of the month was much the warmest part while the last third showed considerable low temperature. The amount of sunshine was very large and only two cloudy days were recorded.

The records of the several weather elements show the following features: The barometer records were all rather low and the changes of pressure generally slow and small. The total wind movement was slightly more than the normal although there was but little high wind. The large amount of wind from the Southwest quadrant was especially noticeable.

The mean temperature was about one degree below the normal; the maximum was more than three degrees higher than the average value for this record, and the minimum nearly five degrees lower than usual, giving a large range for the month. The minimum record was very near to the frost line and the lowest since 1908.

The mean dew point was more than three degrees below the normal and the relative humidity practically normal.

The total precipitation was about sixty per cent of the normal so that the droughty condition at the beginning of the month was not materially bettered.

J. E. OSTRANDER, Meteorologist.

H. H. SHEPARD, Observer.

AMHERST, MA.

BULLETIN No. 417. SEPTEMBER, 1923

Meteorological Observations

AT THE

MASSACHUSETTS

AGRICULTURAL EXPERIMENT

STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.15, 27th 8A.
Minimum reduced to freezing,	29.46, 29th.4 P.
Reduced maximum reading,	30.45, 17th 8A.
Reduced minimum reading,	29.74, 29th, 4P
Mean semi-daily reduced	.30106
Monthly range	.71

Air Temperature. In Degrees Fahr.

Highest	86.5, 1st, 2-30P
Lowest	30 5, 18th, 6A
Mean hourly	62.9
Mean of means of max. and min.	63.9
Mean sensible (wet bulb)	57.5
Monthly range	56.0
Highest mean daily	72.0, 4th
Lowest mean daily	51.0, 15th
Mean maximum	75.6
Mean minimum	52.2
Mean daily range	23.4
Greatest daily range	49.0, 18th
Least daily range	4.0, 23d

Humidity.

Mean dew point	54.4
Mean force of vapor	.546
Mean relative humidity	81.5

Precipitation. In inches.

Total precipitation, in inches	1.89
Number of days on which .01 inch or more rain fell	8

Wind.

Total movement	2704m
Greatest daily movement	195m, 8th
Least daily movement	43m, 11th
Mean daily movement	90m
Mean hourly velocity	3.7m

Maximum pressure per square foot, 3.5 lbs= 26m per hour, 8th, 11 A., S.

Maximum velocity for 5 minutes, 18m per hour, 8th, 10 A., S.

Prevailing direction, West, Northwest.

Summary.

North Northwest	20 per cent
South	23 " "
South Southeast	13 " "
North	10 " "
Northwest	10 " "
Other directions	24 " "

Weather.

Mean cloudiness observed	50 per cent
Total cloudiness recorded by the Sun Thermometer	149 hours = 40 per cent.
Number of clear days	9
Number of fair days	14
Number of cloudy days	7

Bright Sunshine.

Number hours recorded, 224 = 60 per cent.

Rain, 3d, 7th, 8th, 13th, 20th, 21st, 22d, 23d, 26th, 28th.

Thunder and Lightning, 13th, 23d, 28th.

Gales, none.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30 22	30.13	30.168	86.5	2:30 P	60.0	4:30 A	73.3	70.2	63.7	8.7
2	30.31	30.22	30.276	84.0	3 P	62.0	12 P	73.0	70.3	63.0	7.8
3	30.25	30.00	30.102	86.0	3 P	57 5	3:30 A	71.7	71.2	64.7	8.8
4	30.22	30.01	30.130	84 0	4 P	63.5	6 A	73.7	72.0	65.3	11.8
5	30.24	30.12	30.191	74.5	2:30 P	58.0	6 A	66 3	65.0	59.0	6.2
6	30.13	30.09	30.116	82.5	2:30 P	56.5	5 A	69.5	68 9	64.0	8.2
7	30.16	30.07	30.135	72.5	2 P	60.5	12 P	66 5	66.4	61.5	3 3
8	30.07	29.83	29.902	75.0	1 P	60.5	0 A	67.7	67.5	64 7	4.1
9	29.93	29.82	29.860	83.0	2 P	53.0	6:30 A	68 0	65.9	60.3	10.8
10	30.12	29.93	30.039	75.5	1:30 P	46.5	6 A	61.0	66.2	52.5	11 8
11	30.18	30.06	30.129	79.5	5 P	40.0	6 A	59 7	57.7	51.5	11.1
12	30.06	29.87	29.956	76 5	3 P	47.0	6 A	61.7	61.0	56.5	8.0
13	30.08	29.85	29.968	77.0	3:30 P	55.0	12 P	66.0	65.5	55 7	10.2
14	30.24	30.08	30.192	68.0	3 P	41.0	12 P	54.5	53.8	48.3	9 2
15	30'33	30.24	30.319	69 5	2:30 P	34.5	6 A	52.0	51.0	44.7	9.8
16	30.38	30.30	30.354	66.5	3:30 P	42.0	6 A	54.3	55.0	50.5	8.0
17	30.45	30.33	30.428	73.0	3 P	36 0	6 A	54.5	53.0	43.7	10.0
18	30.33	29.93	30.120	79.5	3:30 P	30 5	6 A	55.0	55.3	48.5	9.6
19	29.96	29.85	29.915	84 0	3:30 P	59.0	3 A	71.5	67.7	60.7	9 8
20	30.03	29.97	30.018	67.0	3 P	49 0	6 A	58.0	60.4	57.3	6.1
21	30.01	29.89	29.904	75.0	2 P	57.0	3 A	66.0	67 2	65 0	2.0
22	30.30	30.01	30.193	71.5	3 P	63.0	12 P	67.3	67.3	64.7	1.5
23	30.32	30'17	30.237	63.0	0 A	59.0	10 P	61 0	59.8	58.7	0.0
24	30.17	30.10	30.136	81.5	3 P	56.0	6 A	68.7	65.8	60.7	9.1
25	30.19	30.08	30.139	85.5	4:30 P	53 0	7 A	69.3	65.9	58.7	9.6
26	30 29	30.19	30.254	61.0	4 P	54 0	6:30 A	57.5	58.1	56 0	0.1
27	30 32	30.20	30.271	64.5	6 P	55.0	4 A	59.7	60.1	58.0	0.4
28	30.20	29.93	30.043	80 0	3:30 P	60.0	5 A	70.0	67.2	61.7	8.3
29	29 93	29.74	29 808	78.5	2:30 P	56.0	12 P	67.3	66.9	60.5	10.8
30	29.88	29.81	29.862	63.0	2 P	42.0	7 A	52.5	52.3	46.3	9 4

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	62.0	.644	88.5	W.S.W.	63	0.0	—					
2	60 0	.660	80 5	S.S.E.	94	1.0	14	4 P				
3	62.5	.709	81.5	S.	98	1.5	17	11 A	10:30 P	11:30P	.03	
4	62.5	.734	77.5	N.N.E.	99	1.5	17	9 A				
5	56.0	.580	78.0	S.S.E.	108	0.0	—					
6	57.5	.660	86.0	S.	62	0.0	—					
7	59.0	.606	84.5	S.S.E.	117	1.0	14	6 P	10 A	11 A	T	
8	64 0	.649	91.5	S.S.W.	195	3.5	26	11 A	6 P	10 P	.26	
9	58 5	.565	88.0	N.W.	68	1.5	17	4 P		1 A		
10	47.5	.481	71.0	N.W.	86	1.0	14	11 A				
11	49.0	.420	85.0	W.	43	0.0	—					
12	54.5	.509	89.5	S.	87	2.0	20	3 P				
13	51.5	.538	71.0	N.N.E.	116	1.0	14	1 P	0 A	1:30 A	.02	
14	37.0	.362	61.0	N.	138	1.5	17	12 M				
15	39 5	.355	71.0	N.	73	0.0	—					
16	45.0	.454	66.5	N.N.E.	102	0.5	10	2 P				
17	35.0	.374	55.0	N.	137	1.0	14	11 A				
18	43.5	.453	68.5	W.N.W.	55	0.0	—					
19	58.0	.612	80.0	N.W.	90	6.0	—					
20	54.5	.566	80.5	N.N.W.	65	0.0	—		8 P	12 P	.04	
21	64.0	653	92.5	S.	76	1.0	14	2 P	2 A	2 P	.23	
22	64.0	.660	90.0	N.N.E.	67	0.0	—		1 P	3 P	T	
23	57.5	.507	95.5	N.E.	49	0.0	—		0 A	12 P	.83	
24	59.5	.552	94.5	N.N.E.	48	1.0	14	11 A				
25	56.5	.554	84 5	S.S.E.	52	0.5	10	12 M				
26	55.0	.464	94 0	S.	51	0.0	—		5:30 P	10 P	.01	
27	56 5	.521	89.0	S.	74	0 0	—					
28	60.0	.596	88.5	S.	133	1 5	17	6 P	7 P	9 P	.53	
29	58.5	.569	88.0	W.	78	1.0	14	4 P				
30	42.0	.362	73.5	N.N.E.	180	2.5	22	2 P				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was seasonable in most respects and the transition from Summer to Autumn practically completed

The dry period was prolonged until after the equinoctial date causing the water supply in places to give out. The last week of the month however had considerable rain, although the total for the month was less than one-half the normal.

The first frost of the season occurred on the 15th and a moderate killing frost on the 18th, which is about the average time for this locality. The first third of the month was much the warmest part.

The several weather elements presented the following features of interest. The mean barometer was rather high and the range of pressure less than usual. The total wind movement was about twenty per cent less than the normal and not a single gale was recorded on the pressure chart.

The mean temperature was slightly higher than the normal and the maximum and minimum records were both about their average values. The range of temperature on the 18th of 49 degrees was extremely large for this station.

The mean dew-point and relative humidity were both higher than their normal records.

Only two rainstorms of more than one-half inch were noted.

While the amount of sunshine was above the normal, the last third of the month had considerable cloudy weather.

J. E. OSTRANDER, Meteorologist.

H. H. SHEPARD, Observer.

Massachusetts Agricultural College
AMHERST, MASS.

BULLETIN No. 418. OCTOBER, 1923

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.11, 28th 8A.
Minimum reduced to freezing,	29.29, 19th. 4 A.
Reduced maximum reading,	30.42, 28th 8A.
Reduced minimum reading,	29.58, 19th, 4A
Mean semi-daily reduced	30.100
Monthly range	0.84

Air Temperature. In Degrees Fahr.

Highest	81.0, 14th, 3P
Lowest	26 5, 28th, 6A
Mean hourly	50.1
Mean of means of max. and min.	51.1
Mean sensible (wet bulb)	44 5
Monthly range	54.5
Highest mean daily	65.0, 14th
Lowest mean daily	39.5, 31st
Mean maximum	63 9
Mean minimum	38 3
Mean daily range	25.6
Greatest daily range	40.0, 9th
Least daily range	6.0, 23d

Humidity.

Mean dew point	41.3
Mean force of vapor	.338
Mean relative humidity	81.5

Precipitation. In inches.

Total precipitation, in inches	5.50
Number of days on which .01 inch or more rain fell	6

Wind.

Total movement	3800m
Greatest daily movement	238m, 19th
Least daily movement	28m, 11th
Mean daily movement	123m
Mean hourly velocity	5.1m

Maximum pressure per square foot, 8.0 lbs= 40m per hour, 30th, 6P., S.

Maximum velocity for 5 minutes, 30m per hour, 30th, 5 P., S.

Prevailing direction, West, Northwest.

Summary.

North Northaest	16 per cent
South	13 " "
Southwest	13 " "
West Southwest	13 " "
North	10 " "
Northwest	10 " "
Other directions	25 " "

Weather.

Mean cloudiness observed	44 per cent
Total cloudiness recorded by the Sun Thermometer	109 hours = 32 per cent.
Number of clear days	12
Number of fair days	15
Number of cloudy days	4

Bright Sunshine.

Number hours recorded, 232 = 68 per cent.

Rain, 4th, 10th, 15th, 18th, 19th, 20th, 23d, 24th, 28th, 30th.

Thunder and Lightning, 30th.

Frosts. 7th, 8th, 9th, 21st, 27th, 28th, 31st.

Gales. 40m 30th, S.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean, Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	29 92	29.79	29.897	63 0	2 P	38.5	4 A	50.7	50.5	46.7	6.0
2	29.96	29.88	29.932	72.0	4 P	41 0	6:30 A	56.5	55.4	51 0	10.3
3	29.91	29.75	29.818	73.0	3:30 P	40.5	7 A	56.7	54 6	46.7	10.6
4	29.88	29.67	29.770	70 0	2 P	38.0	7 A	54.0	51.6	44.5	8.4
5	30.10	29.88	30.049	57.0	3:30 P	34.0	6:30 A	45.5	44.8	39.7	10.2
6	30.17	29.96	30.076	56.0	3 P	33 5	6:30 A	44.7	43.0	38.7	10.1
7	30.28	30.17	30.240	64.0	3 P	27.5	6:30 A	45.7	44.0	38.7	11.0
8	30.41	30.28	30.357	66.5	4 P	27.5	6:30 A	47.0	44.1	36 0	10.9
9	30.34	30.21	30.280	69.0	3 P	29.0	6:30 A	49.0	48.1	40.5	10.7
10	30.21	30.05	30.148	67 5	2 P	33 0	7 A	50.3	50.8	45.0	8.1
11	30.21	30.06	30.116	70 0	3:30 P	40.0	6:30 A	55 0	53.5	47.3	8.2
12	30.33	30.21	30.302	68.5	3 P	43.0	7 A	55.7	54 2	49.7	7.6
13	30.33	30.20	30.277	68 0	4 P	51.0	8 A	59 5	57.2	53 7	4.8
14	30.20	29.98	30.088	81 0	3 P	57.5	0 A	69 3	65.0	58.5	5 9
15	30.23	30.02	30.165	68 0	4 P	43 0	12 P	55.5	55.1	47 0	6.8
16	30 28	30.23	30.296	69 0	4 P	36.5	6 A	52 7	49.1	43.5	8.3
17	30 33	30.09	30.224	70.0	3 P	34.5	7 A	52.3	50.7	41.7	10.0
18	30.09	29.63	29.850	57.5	12 P	39 0	6 A	48.3	51.0	49.0	1 6
19	29 79	29.58	29.654	70.0	1 P	57.5	0 A	63 7	61.5	59.5	1.8
20	30.12	29.72	29 966	67.0	3 P	40 0	12 P	53.5	56.5	47.3	8.5
21	30.24	30.12	30.227	64.5	3 P	30 5	7 A	47.5	46 2	37.0	9.7
22	30 32	30.23	30.301	56.0	4:30 P	39 0	7:30 A	47 5	45.9	37 0	7.6
23	30.35	30.06	30 248	44.5	9 A	38 5	7 P	41.5	41.1	40.5	0.0
24	30 06	29.74	29 846	63.0	2:30 P	41.0	0 A	52.0	50.5	50.7	0 0
25	29.88	29.81	29.858	60.0	3 P	45.5	7 A	52 7	50.8	45.7	9.2
26	30.12	29.88	30.016	55.5	12 M	37 0	12 P	46.3	48.5	42 7	8 0
27	30.37	30.12	30.300	60.5	3 P	29 0	6:30 A	44 7	41.4	35.3	9 9
28	30.42	30.30	30.368	54.5	3 P	26.5	6 A	40 5	42 5	37 3	5.3
29	30 34	30 26	30.312	62.0	3 P	42 5	6:30 A	52.3	51.0	46.7	7.7
30	30.28	29.84	30.072	67.5	3 P	45.5	8 A	56 5	53.1	48 7	5.3
31	30.11	30.02	30.070	45.0	2 P	29.0	12 P	37.0	39.5	32.3	9.1

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	43.0	.366	77.5	N.W.	195	5.0	32	9 A				
2	46.5	.446	72.0	W.S.W.	93	0.5	10	12 M				
3	43.0	.368	77.5	S.S.W.	54	0 5	10	3 P				
4	42.5	.320	86.0	S.W.	79	1.5	17	11 P	2 P	2:30 P	T	
5	35.5	274	77.0	W.	157	2.5	22	1 P				
6	34.5	.272	75.0	W.S.W.	123	2.0	20	10 A				
7	35 5	.262	78.5	N.N.W.	77	0.5	10	3 P				
8	31.5	.231	78.5	N.	71	0.0	—					
9	36.5	.287	77.5	N N.E.	62	0.5	10	12 M				
10	43.0	.337	85 5	W.S.W.	73	1.5	17	5 P	6 P	8 P	T	
11	45 5	.341	91.0	W.S.W.	28	0.0	—					
12	47.5	.399	87.5	S.	42	0.5	10	3 P				
13	53.0	.435	92.5	S.S.W.	121	2.0	20	6 P				
14	56.5	.546	85.0	S.	142	2.0	20	2 P				
15	45.5	.344	88.0	N.	102	0 0	—		23:0 A	7:30 A	.20	
16	42 0	.302	91.5	S.	33	0.0	—					
17	36.5	.317	73 0	N.N.E.	66	0 5	10	1 P				
18	44.5	.404	74.0	N.N.E.	164	1.5	17	11 P	10:30 A	12 P	.06	
19	58.5	.550	91.5	N.	238	4.0	28	10 P	0 A	12 P	.17	
20	46 0	.354	88.5	W.	169	2.5	22	0 A	0 A	8 A	T	
21	32.5	256	75.0	W.N.W.	65	0 5	10	11 A				
22	30.0	.260	66 5	N.N.E.	189	1.5	17	9 A				
23	39.0	.265	90.5	N.E.	221	3.0	24	2 P	9 A	12 P	2.40	
24	50.0	.386	95.0	N.E.	211	4.0	28	11 P	0 A	9:30 P	1.93	
25	43.5	.331	86.0	S.W.	193	2 0	20	1 P				
26	37.0	.379	67.0	N.W.	188	3.5	26	3 P				
27	28 5	.236	66.5	N.N.E.	60	0 5	10	4 P				
28	33 5	.264	79.0	S.W.	114	4.0	28	12 M	2:30 P	3 P	T	
29	45.0	.372	89 5	S.	113	0 0	—					
30	48.0	.352	97.0	S-W.	199	8.0	40	6 P	4 P	12 P	.74	
31	26.5	.210	68.5	N.W.	158	1.5	17	2 P				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The light precipitation, which began early in June, was ended, near the close of the month, by one of the heaviest rains which has ever been noted at this station. The storm of the 23d and 24th totaled about four and one-third inches and for a period of seven hours showed three inches of rain, a very unusual rate for so long a time. Another heavy rain storm on the 30th brought the total for the month up to about one and one-half times the normal for October. These storms did much to relieve the droughty conditions which existed although the run off was large. Considerable more rain is still needed before the ground freezes. The relative humidity was high owing to a number of foggy mornings.

The mean barometer was above the normal and range of pressure small for this time of year. Owiug to the comparative steady pressure the total wind movement was rather small and only one gale was registered. The wind direction was more variable than usual.

The mean temperature was practically normal and the range slightly smaller than usual. The maximum and minimum records were both several degress higher than their normal values.

The mean dew-point was practically normal notwithstanding the high relative humidity referred to above.

Although the rainfall was large the number of days showing a measurable amount of precipitation was much below the average.

The amount of sunshine was very large for this time of year.

J. E. OSTRANDER, Meteorologist.

H. H. SHEPARD, Observer.

AMHERST

BULLETIN No. 419. NOVEMBER, 1923

Meteorological Observations

AT THE

MASSACHUSETTS

AGRICULTURAL EXPERIMENT

STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.30, 2d 8A
Minimum reduced to freezing,	29.04, 7th, 3 P.
Reduced maximum reading,	30.62, 2d 8A.
Reduced minimum reading,	29.34, 7th, 3P.
Mean semi-daily reduced	30.068
Monthly range	1.28

Air Temperature. In Degrees Fahr.

Highest	66.5, 4th, 4P
Lowest	21.0, 2d, 6:30A
	20th, 3:30 A. 29th, 7:30 A.
Mean hourly	39.1
Mean of means of max. and min.	39.8
Mean sensible (wet bulb)	34.8
Monthly range	45.5
Highest mean daily	48.0, 6th
Lowest mean daily	30.1, 19th
Mean maximum	49.8
Mean minimum	29.8
Mean daily range	20.0
Greatest daily range	43.5, 4th
Least daily range	6.0, 7th

Humidity.

Mean dew point	31.2
Mean force of vapor	.228
Mean relative humidity	81.5

Precipitation. In inches.

Total precipitation, in inches	5.05
Total snow, in inches	1.
Number of days on which .01 inch or more rain fell	10
Days of sleighing	

Wind.

Total movement	3379m
Greatest daily movement	256m, 21st
Least daily movement	18m, 16th
Mean daily movement	113m
Mean hourly velocity	4.7m

Maximum pressure per square foot, 50.0 lbs= 32m per hour, 30th, 7P., S.S.W.

Maximum velocity for 5 minutes, 22m per hour, 30th, 5 P., S.

Prevailing direction, West, Southwest.

Summary.

South	23 per cent
North Northaest	17 " "
North	13 " "
Southwest	13 " "
South Southwest	10 " "
Northwest	10 " "
Other directions	14 " "

Weather.

Mean cloudiness observed	48 per cent
Total cloudiness recorded by the Sun Thermometer	145 hours = 49 per cent.
Number of clear days	7
Number of fair days	11
Number of cloudy days	12

Bright Sunshine.

Number hours recorded, 153 = 51 per cent.

Rain, 6th, 7th, 8th, 9th, 11th, 18th, 22nd, 23rd, 24th, 25th, 27th, 30th.

Snow, 8th, 9th, 24th, 25th

Frosts, before the 16th. 1st, 2d, 3d, 4th, 5th, 9th, 10st, 11th, 13th.

Gales, none.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean, Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.52	30.11	30.361	46.5	3:30 P	23.5	6:30 A	35.0	33.2	27.5	9 7
2	30.62	30.50	30.571	55.0	3 P	21 0	6:30 A	38.0	34.2	27 3	6.5
3	30.53	30.35	30.460	65 0	3:30 P	22.0	7 A	43.5	37.0	27.7	9.1
4	30.35	30.09	30.202	66.5	4 P	23 0	6:30 A	44.7	40.1	32 0	2.1
5	30.09	29.97	30.030	65.5	3 P	27.5	7 A	46 5	44.5	38.5	7.8
6	29.97	29.72	29.853	56.5	3 P	41.5	8 A	49 0	48 0	43.5	2.7
7	29 72	29.34	29 396	50.0	3 P	44 0	12 P	47.0	46.4	44.3	0.1
8	29.98	29.44	29.759	44.0	0 A	31.0	12 P	37 5	37.5	34 0	0.7
9	30.25	29 98	30.178	42.0	3 P	27 0	5 A	34.5	33.1	29.3	8 9
10	30.37	30.16	30.288	49.0	2:30 P	22 5	6 A	35.7	35.3	31 0	7 9
11	30.35	30.08	30.186	42.0	9 P	27.5	7:30 A	34 7	35.4	33.3	1.4
12	30.43	30.35	30.426	53 5	3:30 P	33 0	7 A	43.3	41 2	35.5	6.3
13	30.35	30.16	30.268	53.0	3 P	32.5	4 A	42 7	42.0	37.7	6 2
14	30.27	30.16	30.254	55.5	2 P	33.0	12 P	44.3	43.5	35.3	8.6
15	30 25	30.05	30.193	43 0	3 P	33 0	0 A	38.0	39.4	35 7	3.2
16	30 05	29.75	29.854	46.5	3 P	33.0	11 P	39 7	39.3	36.3	3 1
17	29 76	29.61	29.700	52.0	3 P	34 0	0 A	43.0	41.2	38 7	6.1
18	29.68	29.51	29.558	46.0	2:30 P	34.0	12 P	40 0	39.8	36.7	0.3
19	30.16	29.68	29 958	36 5	2 P	25.0	7 A	30.7	30.1	23.7	9.0
20	30.31	30.16	30.290	47.0	3 P	21.0	3:30 A	34.0	33.1	27.5	8 9
21	30.29	30.10	30.179	55 0	3 P	33 0	0 A	44 0	45 0	41.7	7.1
22	30 31	30.06	30.192	55 5	3 P	36.0	12 P	45.7	46.8	41.0	3.3
23	30.34	29.89	30.185	41.5	3 P	27.0	4:30 A	34 3	35.3	33 0	1.6
24	29 89	29.45	29 574	45.0	6.30 P	35.0	12 P	40.0	41.6	41.0	0.0
25	29 81	29.43	29.600	38.0	3 P	31.0	12 P	34.5	34.0	31.5	4 0
26	29 90	29.81	29.853	49.0	2 P	27.0	6 A	38.0	39.0	34.7	7 0
27	30.17	29.84	29.994	49.0	1 P	34 5	12 P	41.7	43 0	37.7	6 7
28	30.38	30.17	30.310	45.0	3 P	28.0	12 P	36.5	36 6	31.3	6.5
29	30.48	30.33	30.408	43.0	3 P	21.0	7:30 A	32.0	32.0	29.0	8.0
30	30 33	29 75	29.972	58.0	7:30 P	33.0	5 A	45.5	44.7	46.7	0.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	21.5	.171	70.5	N.W.	73	0.0	—					
2	22.0	.169	73.5	S.S.E.	35	0.0	—					
3	21 5	.172	72 0	S.	21	0 0	—					
4	26 0	.210	69.0	S.S.W.	30	0.0	—					
5	35 5	.258	86.0	S.S.W.	28	0.0	—					
6	41.5	.302	87.5	S.	35	0.0	—		6:30 P	12 P	.28	
7	43.5	.298	94.0	N.N.W.	108	1.5	17	7 P	0 A	12 M	.35	
8	30.5	.208	84.0	W.N.W.	219	3.0	24	1 A	0 A	12 P	.05	T
9	24.0	.177	76 5	N.	150	1.5	17	3 P	0 A	3 A	T	T
10	28.0	.192	82.0	S.	90	2.0	20	6 P				
11	30 5	.204	87.5	N.N.E.	72	0.0	—		2:30 P	7 P	.03	
12	32.5	.220	86.5	N.N.E.	137	1.5	17	9 A				
13	34.0	.256	78.5	N.	157	2 5	22	10 A				
14	31.0	225	78 5	N.N.E.	111	1.5	17	2 A				
15	32.0	.231	77.0	N.N.E.	94	0.0	—					
16	33.5	.230	85 0	S.	18	0 0	—					
17	37.5	.248	90.0	S.S.W.	25	0.0	—					
18	35.0	.228	89.5	S.W.	112	3 0	24	10 P	6 P	7 P	T	
19	14.5	.150	58.0	N.W.	254	2.5	22	6 A				
20	20.5	.176	65 5	S.	150	2.5	22	2 P				
21	39 0	.294	83.5	S.	256	4 0	28	3 P				
22	37.5	.284	81.5	S.W.	148	2.0	20	3 P	7 A	9 A	.15	
23	30 5	.200	88 0	N N.E.	111	3.0	24	7 P	6 P	12 P	.45	
24	40.0	.268	92.0	N.	205	4.0	28	11 P	0 A	12 P	1.85	1.25
25	27.5	.192	78.5	N.W.	231	3.0	24	9 P	0 A	11 A	.39	
26	32 0	.226	83.5	S.	114	1.0	14	6 P				
27	34.0	.245	88.0	S.W.	157	2.5	22	2 P	3 A	5 A	.03	
28	27 0	.192	78.5	W.	78	0.0	—					
29	26.5	.173	85 0	S.W.	59	1.0	14	2 P				
30	46 0	.348	95 0	N	101	5.0	32	7 P	4 A	10:30 P	1 47	

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The most pronounced feature of the weather was the two heavy rainstorms that occurred late in the month. The deficiency in precipitation that had accumulated from June to October has been largely relieved by the heavy rain that occurred late in October and the two that were recorded near the last of this month. While a few low temperatures were recorded the ground was practically free from frost the whole month and the ground water has been greatly increased before winter sets in. In most respects the weather of the month was nearly normal with a little more sunshine than usual. The month closed with but little evidence of winter at hand.

The mean barometer was slightly higher than usual and the range of pressure was about the usual amount. The total wind movement was unusually small for the time of year and no gales were registered. The wind was very changeable and several rather pronounced periods of high and low pressure were recorded.

The mean temperature was practically normal but the minimum temperature was very much higher than usual. Although the temperature fell to 21 degrees early in the month and reached the same figure twice later it seemed unable to get any lower. Most of the high temperatures occurred early in the month.

The mean dew point was practically normal but the relative humidity was several points higher than usual.

The total precipitation was more than fifty per cent above the normal and came in a few storms.

While the sunshine was more than the normal there were a number of cloudy days.

J. E. OSTRANDER, Meteorologist.

H. H. SHEPARD, Observer.

BULLETIN No. 420. DECEMBER, 1923

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.49, 15th 8A.
Minimum reduced to freezing,	28.98, 28th. 12 M
Reduced maximum reading,	30.81, 15th 8A.
Reduced minimum reading,	29.29, 28th, 12 M
Mean semi-daily reduced	.30.035
Monthly range	1.51

Air Temperature. In Degrees Fahr.

Highest	57.0, 6th, 1:30 P.; 13th, 8 P.
Lowest	7.0, 30th, 7:30 A.
Mean hourly	34.7
Mean of means of max. and min.	34.8
Mean sensible (wet bulb)	31.7
Monthly range	50.0
Highest mean daily	46.9, 13th
Lowest mean daily	16.6, 30th
Mean maximum	42.1
Mean minimum	27.4
Mean daily range	14.7
Greatest daily range	24.0, 21st
Least daily range	5.0, 23d

Humidity.

Mean dew point	26.3
Mean force of vapor	.198
Mean relative humidity	77.4

Precipitation. In inches.

Total precipitation, in inches	4.23
Total snow, in inches	9¾
Number of days on which .01 inch or more rain fell	14
Days of sleighing	4

Wind.

Total movement	4428m
Greatest daily movement	314m, 14th
Least daily movement	31m, 22d
Mean daily movement	143m
Mean hourly velocity	6.0m

Maximum pressure per square foot, 9.5 lbs = 44m per hour, 6th, 3 P., S.E.

Maximum velocity for 5 minutes, 30m per hour, 6th, 2 P., S. E.

Prevailing direction, West, Northwest.

Summary.

North	23 per cent
Northwest	13 " "
South Southwest	13 " "
South	16 " "
North Northaest	10 " "
Other directions	25 " "

Weather.

Mean cloudiness observed	52 per cent
Total cloudiness recorded by the Sun Thermometer	121 hours = 43 per cent.
Number of clear days	9
Number of fair days	15
Number of cloudy days	7

Bright Sunshine.

Number hours recorded, 162 = 57 per cent.

Rain, 2d, 5th, 6th, 9th, 10th, 11th, 13th, 20th, 22nd, 23rd, 24th, 31st.

Snow . . 14th, 24th, 25th, 28th 29th. 30th 31st

Gales. 44 m, 6th.; S. E. ; 36 m, 13th, N.; 35 m. 14 th, N. N. W.; 36 m., 17th, W.; 35 m., 28th, W.; 40 m. , 29th, N. W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea-Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean, Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30 28	29.80	30.160	51.0	1:30 P	34.0	12 P	42.5	45.3	40.3	7 6
2	30.28	29.98	30.102	39.0	2 P	25 0	7 A	32.0	33.6	31.0	6.4
3	30.01	29.97	29.908	48 0	2:30 P	31.0	12 P	39.5	38 2	33.0	8.1
4	30.09	30.00	30.058	46.0	2 P	29 5	2 A	37.7	36.8	33 7	5.6
5	30.04	29.78	29.902	44.5	5 P	34.0	0 A	39.3	40.1	39.0	0.0
6	29.78	29.42	29.514	57.0	1:30 P	42.0	9 A	49 5	46.3	41.5	4.4
7	29.97	29.60	29 888	48.0	3 P	39 0	6 A	43.5	42.0	33.5	8.1
8	29.98	29.82	29.890	54.0	3 P	34.5	2 A	44 3	43.0	38 0	7.7
9	30.20	29.89	30.056	47.0	3 P	41 5	0 A	44.3	45.0	42.7	0.0
10	30.38	30.09	30.259	42.0	3:30 P	33.5	8 A	37.7	39.2	34 7	1.1
11	30.17	30.09	30.143	42.0	1:30 P	31.0	12 P	36 5	37.1	30.7	8.6
12	30.22	30.11	30.176	46.0	3 P	30 0	8 A	38.0	37 2	30.3	8.3
13	30.11	29.76	29.856	57.0	8 P	35.5	0:30 A	46 3	46.9	46.5	2.3
14	30.62	29.90	30.356	42.0	0 A	23 0	12 P	32.5	30.9	25.3	3.8
15	30.81	30.55	30.690	32.0	3 P	16 0	7:30 A	24.0	23.8	20 0	6.5
16	30.55	29.97	30.152	40.0	12 P	24.0	1 A	32 0	32.4	28.7	5 2
17	30 28	29.98	30.167	41.0	1 A	25 0	12 P	33.0	34.4	27.3	8.4
18	30.49	30.28	30.426	32 0	3 P	17.0	7:30 A	24 5	23.0	17.7	8.4
19	30 55	30.36	30.465	36 0	4 P	14.0	2:30 A	25.0	24.4	22.5	4.8
20	30.36	30.18	30.260	47 0	2.30 P	24.0	5 A	35.5	34.7	33.0	5.0
21	30.18	30.13	30.157	56.0	2 P	32 0	9 A	44 0	41 4	35.5	6.0
22	30.17	29.92	30.066	44 0	2:30 P	30.0	6 A	37.0	36.7	35.3	3.9
23	29.92	29.58	29.672	42.0	3 P	37.0	12 P	39.5	39.6	39 0	0.0
24	29.95	29.58	29.808	37.0	0 A	22.0	12 P	29 5	30 2	26.0	6.2
25	29.94	29.73	29 840	33.5	8:30 P	17 5	3 A	25.5	26.0	25.7	6.2
26	29 96	29.73	29 937	41.0	4 P	26 5	7:30 A	33 7	33.4	30.7	5 3
27	29.98	29.84	29.954	39.0	3 P	28.0	12 P	33.5	32.3	28.3	8 0
28	29.84	29.29	29.378	36.5	6 P	25.0	5 A	30.7	29 0	27.0	2.4
29	29.98	29 46	29.718	33.0	8 A	21 0	11 P	27 0	30 5	26.0	7.3
30	30.20	29.98	30.174	23.0	4:30 P	7.0	7:30 A	15.0	16 6	14.5	6.0
31	30 05	29 59	29.853	30.0	12 P	20 0	2 A	25.0	25.6	25.7	0 0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	37.0	.271	80.5	N.W.	272	5.5	33	3 P				
2	26.0	.194	75.0	S.E.	53	0.5	10	2 P	8 P	9 P	.01	
3	30.5	.196	87.5	W.N.W.	100	1.5	17	11 A				
4	30 0	.210	80.0	N.N.E.	41	0.0	—					
5	37 5	.250	89.5	N.E.	73	0.5	10	12 P	4 A	12 P	.87	
6	38.0	.284	83 5	N.	298	9.5	44	3 P	0 A	10:30A	.95	
7	25.0	.234	58.5	W.	263	5.5	33	9 A				
8	33.5	.262	73.0	S.	203	2.5	22	2 P				
9	39.5	.286	85.0	S.	75	0.0	—		8:30 A	7 P	.03	
10	31.0	.218	82.0	N.	57	0.0	—		7:30 P	12 P	.20	
11	24 0	.196	66.5	N.W.	196	4.5	30	11 A	0 A	3:30 A	.18	
12	16.0	.196	59.0	S.S.W.	100	0.0	—					
13	42.0	.367	76 0	S.	303	6 5	36	8 P	4 P	11:30 P	.09	
14	16.0	.160	59.0	N.W.	314	6.0	35	3 A	7:30 A	8:30 A	T	T
15	16.5	.118	80 0	S.S.W.	93	1.0	14	9 P				
16	22.0	.183	65 5	S.S.W.	159	5.0	32	12 P				
17	18.5	.174	59.5	N.W.	298	6.5	36	5 A				
18	13.0	.106	77.5	N.	153	2.0	20	4 P				
19	19 0	.134	82 0	S.W.	61	1.0	14	1 P				
20	29.5	.201	85.5	S.	36	0.0	—		5:30 P	6:30 P	.01	
21	33.0	.218	89.5	S.S.E.	74	2.0	20	1 P				
22	33.0	.216	91.0	S.S.W.	31	0.0	—		7 P	12 P	.20	
23	38.5	.242	96.0	N.N.E.	101	0.5	10	7 A	0 A	12 P	.60	
24	22.5	.152	83.0	N.	244	3.5	26	7 A	0 A	11:30A	.16	1¼
25	23.5	.150	89.0	S.	88	6.0	—		8 P	12 P	T	T
26	26.5	.188	78.0	W.	151	3.0	24	1 P				
27	22 0	.175	67.0	N N.E.	96	0.5	10	11 A				
28	21.0	.166	72.0	N.	131	6.0	35	8 P	2 A	5 P	.40	5.
29	18 0	.163	62.0	W. N.W.	275	8.0	40	1 P	8:30 A	10:30A	T	*T
30	9.0	.092	76 0	N.	43	0.0	—	—	4:30 P	12 P	.14	2
31	24.0	.144	91 0	N.	46	0.0	—	—	0 A	12 P	.39	1

**Rain or melted snow at base of tower. * Included in following day.

Annual Summary for 1923.

Pressure. In inches.

Maximum reduced to freezing, ... 30.52, Jan. 22nd, 11 A.
Minimum reduced to freezing, ... 28.98, Dec. 28th, 12 M.
Maximum reduced to freezing and sea-level, ... 30.84, Jan. 22nd, 11 A.
Minimum reduced to freezing and sea-level, ... 29.29, Dec. 28th, 12 M.
Mean semi-daily reduced to freezing and sea-level, ... 30.020
Annual range, ... 1.55

***Air Temperature.** In degrees Fahr.

Highest, ... 97.0, June 19th, 3:00 P.
Lowest, ... —12.0, Jan. 31st, 6:00 A.
Mean hourly, ... 46.6
Mean of means of max. and min., ... 40.8
Mean sensible (wet bulb), ... 41.4
Annual range, ... 109.0
Highest mean daily, ... 81.7, June 20th
Lowest mean daily, ... 3.8, Feb. 18
Mean maximum, ... 58.5
Mean minimum, ... 35.1
Mean daily range, ... 23.4
Greatest daily range, ... 49.0, Sept. 23rd.
Least daily range, ... 3.5, Nov. 7th.

Humidity.

Mean dew point, ... 36.9
Mean force of vapor, ...369
Mean relative humidity, ... 75.5

Wind.

Prevailing direction, ... West, Northwest

Summary.

North . . . . . 12 per cent
North Northwest . . . . . 11 " "
South . . . . . 12 " "
South Southwest . . . . . 12 " "
Northwest . . . . . 12 " "
Other directions, ... 41 " "
Total movement, ... 48,864 m
Greatest daily movement, ... 405m., Mar. 5th
Least daily movement, ... 18 m., Nov. 16th
Mean daily movement, ... 134 m
Mean hourly velocity, ... 5.6 m
Maximum pressure per square foot, 22.5 lbs.,= 67 m. per hour, Apr. 29th. 1 A., S. S. W.
Maximum velocity for 5 minutes, 36 m. per hour, Mar. 28th, 2 P., W.N.W.; Apr. 29th, 1 A. S.S.W.

Precipitation. In inches.

Total precipitation, rain or melted snow, . 39.49
Snow total in inches, ... 63.7
Number of days on which .01 or more rain or melted snow fell, ... 125

Weather.

Mean cloudiness observed, ... 45 per cent.
Total cloudiness recorded by Sun Thermometer, ... 1686 hrs.=38 per cent.
Number of clear days, ... 141
Number of fair days, ... 131
Number of cloudy days, ... 93

Bright Sunshine.

Number of hours recorded, 2773 hrs.=62 per cent

Dates of Frosts.

Last, ... May 24th
First, ... Sept. 15th

Dates of Snow.

Last, ... April 15th
First, ... Nov. 8th
Total days of sleighing, ... 86

Gales of 50 or More Miles Per Hour.

54 m. Feb. 3d., N. W.; 52 m. Mar. 19th., W. N. W.; 59 m, Mar. 28th. W N. W.; 52 m. Apr. 24th. N.; 67 m. Apr. 29th. S. S. W.

Temperature in ground shelter.

H. H. SHEPARD
Observer.

J. E. OSTRANDER,
Meteorologist.

...Agricultural College,
AMHERST, MASS.

BULLETIN No. 421. JANUARY, 1924

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.44, 2d 9A.
Minimum reduced to freezing,	29.03, 11th. 2 P
Reduced maximum reading,	30.77, 2d 9A.
Reduced minimum reading,	29.33, 11th, 2 P
Mean semi-daily reduced	.30.135
Monthly range	1.44

Air Temperature. In Degrees Fahr.

Highest	54.0, 11th, 11 A.
Lowest	-8.0, 27th, 6 A.; 28th, 6 A.
Mean hourly	26.2
Mean of means of max. and min.	25.8
Mean sensible (wet bulb)	23.1
Monthly range	62.0
Highest mean daily	47.0, 11th
Lowest mean daily	-0.3, 27th
Mean maximum	35.1
Mean minimum	16.5
Mean daily range	18.6
Greatest daily range	35.0, 28th
Least daily range	10.5, 13th

Humidity.

Mean dew point	18.8
Mean force of vapor	.148
Mean relative humidity	79.9

Precipitation. In inches.

Total precipitation, in inches	3.85
Total snow, in inches	10
Number of days on which .01 inch or more rain fell	11
Days of sleighing	15

Wind.

Total movement	6163m
Greatest daily movement	462m, 26th
Least daily movement	71m, 10th
Mean daily movement	199m
Mean hourly velocity	8.3m

Maximum pressure per square foot, 22.5 lbs = 67m per hour, 11th, 10 A., S.S.E.

Maximum velocity for 5 minutes, 38m per hour, 21st, 5 P., N. W.

Prevailing direction, West.

Summary.

Northwest	23 per cent
South Southwest	13 " "
North	10 " "
South	10 " "
Southwest	10 " "
West	10 " "
Other directions	24 " "

Weather.

Mean cloudiness observed	49 per cent
Total cloudiness recorded by the Sun Thermometer	119 hours = 40 per cent.
Number of clear days	9
Number of fair days	15
Number of cloudy days	7

Bright Sunshine.

Number hours recorded, 175 = 60 per cent.

Rain, 1st, 2d, 3d, 10th, 11th, 16th, 19th, 30th.

Snow . . 2d, 5th, 21st, 24th, 25th.

Gales. 35 m. per hour : 58 m., 1st, N. W.; 48. m 3d, N. W.; 36.m, 4th, N. W.; 40 m. 7th, N. W.; 67 m. 11th, S. S. E.; 40 m. 17th, N. W.; 63 m. 21st. N. W. 45 m. 23d, W. N. W.; 35 m. 25th, N ; 56 m. 26th, N. W.; 36 m. 27th, W. N. W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum.	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30 56	29.54	30.212	44 0	3 A	12.0	12 P	28.0	26.7	23.0	8.2
2	30.77	30.40	30.690	26.0	1 P	−0.5	7:30 A	12.7	15.2	10.7	7.4
3	30.40	29.72	29.932	38.0	6 P	23.0	0 A	30.5	30.1	30.5	0.2
4	30.42	30.13	30.394	30.0	3 P	17.0	12 P	23.5	24.8	19 2	8.2
5	30.38	29.96	30.108	22.0	5:30 P	10.0	12 P	16 0	16.8	15.3	0.0
6	30.23	30.01	30.126	21.0	3:30 P	10.0	3 A	15 5	14.2	12.3	7.3
7	30.21	30.02	30.106	31.0	3 P	18.0	0 A	24.5	23.0	18.5	3.1
8	30.38	30.21	30.342	34.0	3:30 P	15.0	7 A	24 5	24.9	20.7	3.8
9	30.37	30.18	30.242	46.0	2 P	24 0	5 A	35.0	34.3	31.7	6 8
10	30.19	29.95	30.090	42.0	3:30 P	23.5	7:30 A	32.7	34.4	30.3	6.5
11	29.95	29.33	29.500	54.0	11 A	35.5	2:30 A	44 7	47.0	44.7	0.0
12	30.23	29.62	30.095	42.0	0 A	26.0	12 P	34.0	33 1	27.0	7.0
13	30.36	30.06	30.244	31.5	2:30 P	21.0	8:30 A	26 3	27.4	24.5	8 0
14	30 27	30.01	30.145	34.5	2 P	23 0	12 P	28.7	29.6	26.2	7.2
15	30.46	30.27	30.442	33.0	4 P	15 0	8 A	24.0	24.3	19 5	8.3
16	30.43	29.47	30.031	51.0	12 P	18.5	7 A	34 7	32.5	33.2	0.0
17	30 09	29.51	29.995	52.0	3 A	28.0	12 P	40.0	39.8	33.2	8.9
18	30.38	30.09	30.356	38.0	4 P	23.5	8 A	30.7	28.9	24.2	8.4
19	30 35	29.95	30.212	39.0	10 P	26.0	0 A	32.5	34.0	33.7	0.0
20	29.95	29.69	29.755	40.0	2 P	19.0	12 P	29.5	33.8	29.5	2.0
21	30.16	29.79	30.015	19.0	0 A	2 0	11 P	10.5	8 8	4.7	4.6
22	30.30	30.00	30.178	24.0	12 P	3.0	0 A	13.5	14.3	11.5	7.0
23	30.26	29.86	30.027	37.0	2 P	24.0	0 A	30.5	29.6	26.5	4.5
24	30.50	30.12	30.392	32.0	3 P	14 5	7:30 A	23 3	24.6	21.7	8.0
25	30.12	29.38	29.458	40.0	6 P	23.0	12 P	31.5	32.0	33.3	7 0
26	30.25	29.62	30.038	23.0	0 A	−4 0	12 P	9.5	9.0	4.3	7.5
27	30.59	30.25	30.504	7.0	3 P	−8.0	6 A	−0.5	−0.3	−1.5	8.8
28	30.75	30.33	30.580	27.0	12 P	−8.0	6 A	9.5	10.9	8.5	7.0
29	30.33	30.10	30.214	44.0	4 P	27.0	0 A	35.5	35 8	33.3	5.7
30	30.10	29.75	29.867	43.0	1 P	32.0	4 A	57.5	38.3	35.7	5.0
31	30.04	29.74	29.884	42.0	1 P	20.0	12 P	31.0	34.8	28.3	8.9

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	20.0	.137	84.5	N.W.	265	17.0	58	6 A	0 A	6 A	.04	
2	5.5	.084	75.5	S.S.W.	90	0.5	10	4 P	9 P	12 P	.07	1
3	27.0	.182	86.0	N.	131	11.5	48	8 P	0 A	5 P	.60	
4	13.5	.116	72.5	W.	159	6.5	36	2 A				
5	13.5	.093	85.5	N.N.W.	95	5.0	32	6 P	8 A	6:30 P	.12	3
6	8.5	.082	82.0	N.W.	245	3.0	24	11 A				
7	10.5	.114	66.0	S.W.	267	8.0	40	2 P				
8	16.5	.122	78.0	S.S.W.	120	0.5	10	3 P				
9	28.0	.197	81.5	S.S.W.	208	3.5	26	1 P				
10	22.5	.186	83.5	S.	71	0.0	—		8 P	12 P	.02	
11	41.5	.328	83.0	S.W.	257	22.5	67	10 A	0 A	2 P	.68	
12	21.0	.165	70 5	N.W.	280	5.0	32	11 A				
13	21.5	.140	85.0	N.	114	0 0	—					
14	25.0	.151	91.5	N.	273	3.5	26	1 P				
15	16.0	.118	80 0	W.S.W	95	0.0	—					
16	31.5	.217	93.0	S.S.E.	80	5.0	32	8 P	4 P	11 P	1.33	
17	31.5	.200	91.0	N.N.W	266	8.0	40	5 A				
18	20.5	.140	81.5	N.N.E.	115	1.0	14	6 A				
19	32.0	.209	88.5	S.S.W.	164	1.5	17	6 A	4 P	10 P	.01	
20	26.0	.176	83 0	N.W.	153	5.0	32	9 P				
21	−0.5	.060	72.5	W.N.W.	438	20 0	63	9 P	12 M	2 P	T	T
22	2.5	.089	57.5	S.W.	302	4.5	30	8 P				
23	21.5	.157	75.0	W.	329	10.0	45	5 P				
24	18 0	.127	83.5	N.W.	98	1.0	14	1 A	11:30 P	12 P	.04	½
25	30.5	.202	85.0	W. N. W.	134	6.0	35	11 P	0 A	11 P	.93	5½
26	−1.5	.059	72.0	N.W.	462	15.5	56	1 A				
27	−8.5	.044	69.0	W.	294	6.5	36	3 P				
28	4.0	.084	78.5	W.S.W.	132	4.0	28	10 P				
29	28.5	.212	76.5	S.	175	3.5	26	0 A				
30	33 0	.226	85.0	S.	157	2.5	22	12 M	4 P	5 P	.01	
31	23.0	.174	76.0	N.N.W.	194	5.5	33	4 P				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was unusually changeable with rather short periods between the extremes. The rapid changes in barometric pressure undoubtedly was the cause of the rapid changes in temperature recorded, as well as the unusually large wind movement registered.

The last half of the month was more seasonable than the first, although there was less snow. Although the temperature was slightly above the normal it was very much colder than the preceeding December.

There were only two snowstorms of any amount and the ground was practically free from snow about one-half the time.

The records of the several weather elements show the following features of interest: The mean barometer was very high and the maximum and minimum pressures above their respective normals. The range of pressure was less than usual.

The mean temperature was more than a degree above the noamal and the range rather large owing to a rather high maximum. One day, the 27th, averaged below zero, while on the 11th the average was forty-seven degrees.

The mean dew-point and relative humidity were both higher than usual.

The total precipitation was about ten per cent more than the normal and more than one-half of it occurred as rain. The rate of rainfall during the storm of the 16th was rather unusual for so long a period.

The total wind movement was nearly twenty per cent more than the normal and gales of more thah 50 miles per hour were registered on four days. The wind direction was very changeable.

The amount of sunshine was rather large.

J. E. OSTRANDER, Meteorologist.

H. H. SHEPARD, Observer.

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Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing	30.42, 19th, 11 A
Minimum reduced to freezing,	29.29, 13th. 2 A
Reduced maximum reading,	30.75, 19th, 11 A.
Reduced minimum reading,	29.62, 6th, 1 P.; 13th, 2 A.; 20th, 7 P.
Mean semi-daily reduced	.30.069
Monthly range	1.13

Air Temperature. In Degrees Fahr.

Highest	44.5, 26th, 3 P.
Lowest	−2 5, 14th, 6.30 A.
Mean hourly	20.7
Mean of means of max. and min.	20.7
Mean sensible (wet bulb)	17.1
Monthly range	47.0
Highest mean daily	31.2, 3d
Lowest mean daily	11.7, 14th
Mean maximum	30.5
Mean minimum	10.9
Mean daily range	19.6
Greatest daily range	41.0, 25th
Least daily range	3.0, 5th

Humidity.

Mean dew point	12.4
Mean force of vapor	.108
Mean relative humidity	77.5

Precipitation. In inches.

Total precipitation, in inches	2.56
Total snow, in inches	12¾
Number of days on which .01 inch or more rain fell	6
Days of sleighing	25

Wind.

Total movement	3971m
Greatest daily movement	353m, 21st
Least daily movement	24m, 10th
Mean daily movement	137m
Mean hourly velocity	5.7m
Maximum pressure per square foot, 8.5 lbs= 41m per hour, 21st, 12 A., W.N.W.	
Maximum velocity for 5 minutes, 30m per hour, 21st, 12 M., W.N. W.	
Prevailing direction, Northwest.	

Summary.

North	28 per cent
West Northwest	21 " "
North Northeast	17 " "
Other directions	34 " "

Weather.

Mean cloudiness observed	32 per cent
Total cloudiness recorded by the Sun Thermometer	91 hours = 29 per cent.
Number of clear days	17
Number of fair days	6
Number of cloudy days	6

Bright Sunshine.

Number hours recorded, 221 = 71 per cent.

Rain, 4th, 5th, 6th, 20th.

Snow 2d, 3d, 4th, 5th, 6th, 7th, 10th, 15th, 18th, 20th, 22d.

Gales. 35 m. per hour : 41 m., 21st, W.N.W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean, Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.04	29.83	29.940	33.0	3:30 P	9.0	7:30 A	21.0	22.4	17.7	7.9
2	29.83	29.73	29.799	35.0	5 P	22 0	7:30 A	28 5	29.5	24 0	3.4
3	30.02	29.73	29.905	39 0	4 P	27.0	12 P	33.0	31 2	28.3	7.5
4	30.15	30.02	30.116	27.0	0 A	19.0	12 P	23.0	22.4	21.3	0.0
5	30.15	29.77	29.974	22.0	3 P	19.0	0 A	20 5	20 6	20.7	0.0
6	29.77	29.62	29.664	28.0	5 P	20.0	0 A	24 0	24 3	24.5	2.1
7	30.12	29.75	29.966	32.5	2:30 P	25 0	8 A	28.3	28 5	25.5	6.2
8	30.31	30.12	30.234	30.0	4 P	9.0	7 A	19 5	19.0	11.7	9.4
9	30.34	30.15	30.285	33 0	3 P	4 0	7:30 A	18.5	16.1	11.7	9.9
10	30.15	29.76	29.886	25.0	9 P	3.0	7 A	14.0	14.5	13 7	4.0
11	29 93	29.80	29.921	27.0	2 P	11.5	12 P	19 3	19.8	14.5	9.7
12	29.89	29.63	29.720	24.0	4 P	10 0	3 A	17.0	14 5	11.3	7.7
13	29.79	29.62	29.754	24.0	3 P	4.0	7:30 A	14 0	12.5	7.0	9.6
14	29.81	29.69	29.774	25.0	3 P	−2 5	6:30 A	11.3	11.7	9 3	7 0
15	30.22	29.80	30.032	30.0	3 P	4 0	7:30 A	17.0	17.5	13 5	8.4
16	30.38	30.22	30.362	23 5	4 P	10.5	8:30 A	17 0	15.7	11.3	10.1
17	30 52	30.31	30.414	30.5	4 P	6 0	7 A	18.3	18.8	15.5	9.0
18	30 63	30.31	30.484	31 0	3:30 P	11.5	7:30 A	21.0	20.2	14.3	10.3
19	30 75	30.59	30.733	22.0	8:30 P	2.5	5:30 A	12.3	13.3	13.5	9.2
20	30.59	29.62	29.930	33.0	5:30 P	13.0	3 A	23.0	23.9	24.5	6.5
21	29.90	29.70	29.818	30.0	1 A	20 0	12 P	25 0	24 6	22.0	9.6
22	30 28	29.90	30.160	25.5	4 P	9.0	7:30 A	17.3	19.0	16.7	9.3
23	30.50	30.28	30.350	21.0	4 P	6.0	12 P	13.5	14.1	13.5	9.4
24	30.65	30.50	30.604	36 0	3:30 P	−1 0	6 A	17 5	16 9	11.7	10.1
25	30.56	30.39	30 474	39.5	3:30 P	−1.5	7 A	19.0	19 9	15.0	9.6
26	30.39	30.17	30.274	44 5	3 P	10.5	7:30 A	27.5	26.3	18 7	10.2
27	30.17	29.70	29 894	43.0	4 P	8.5	6:30 A	25.7	26 6	20.3	10.1
28	29.79	29.68	29.760	39.5	2 P	16.5	7 A	28.0	30.0	24.0	10.2
29	29.81	29.74	29.786	30.5	1 P	21.0	5 A	25.7	26 2	21.3	10.7

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	12.5	.117	73.5	W.	102	0.5	10	4 P				
2	16 5	.147	67.0	S.W.	41	0 0	—		9 P	12 P	T	¼
3	26 5	.159	92.0	N.	46	0 0	—		0 A	4 A	T	¼
4	19.5	.118	93.0	N.	106	0.5	10	3 P	6 A	12 P	.17	⅝
5	19 5	.114.	96.5	N.	187	0 5	10	11 P	0 A	12 P	.88	1¾
6	23.5	.136	94.0	N.	110	0.5	10	2 A	0 A	3 P	.03	T
7	22.0	.147	82.5	W.N.W.	50	2 5	22	10 P	1 A	2 A	.02	1
8	6.0	.082	74.5	N.N.E.	145	0 5	10	2 P				
9	7.5	.083	81 0	N.W.	133	3.5	26	4 A				
10	12.0	.090	80.5	N.	24	2.5	22	10 P	9 A	9 P	.06	1½
11	10.0	.092	76 0	N.N.W.	205	1.0	14	2 A				
12	6.5	.080	76 5	N.	152	3.0	24	12 P				
13	−5.0	.069	53.0	N.	193	2.0	20	3 A				
14	6.5	.074	85 5	S.S.W.	45	0 0	—					
15	10.0	.092	80 5	N.N.E.	48	2.5	22	10 P	3 P	3 P	T	T
16	6.0	.080	73.5	N.W.	266	5.0	32	1 P				
17	6.0	.109	57.0	W.N.W.	112	1.0	14	5 P				
18	9.0	.094	73.0	N.N.E.	176	2 5	22	10 A	11 P	12 P	T	¼
19	8.0	.092	75 0	N N.E.	164	2.0	20	12 M				
20	23.0	.137	94.0	N N E.	157	5.5	33	1 P	2 A	7 P	1.40	7
21	20.5	.122	93.5	W N.W.	353	8 5	41	12 M				
22	14.0	.102	84 5	W.S.W.	294	4.5	30	2 P	3 P	3:30 P	T	T
23	9.0	.086	78.5	W.N.W.	235	3.0	24	1 P				
24	2 5	.090	62 5	W.	104	1.5	17	4 P				
25	10.5	.104	77.0	S S.W.	38	0.0	—					
26	12.5	.118	71.5	W.N.W.	46	0 0	—					
27	12.5	.132	63.0	N.	88	1.5	17	4 P				
28	20 0	.141	79 0	N.N.W	117	2.5	22	4 P				
29	12.0	.132	60.0	W.N.W.	234	3.0	24	4 P				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

Good winter weather was in evidence throughout the whole month. Sleighing started with a sleety snow on the 5th and continued for the remainder of the month. The snowstorm of the 20th was the heaviest storm of the season and much of it was still on the ground when the month closed. While there was much sunshine the temperature was below freezing nearly all the time. The number of clear days was unusually large, and the nights were generally clear and cold. The wind was persistently from the northerly points of the compass.

The mean barometer was slightly higher than the normal and the range of pressure was very small for the time of year. The total range for the month occurred on the 19th–20th when the heavy snowfall occurred. This rapid fall of the barometer of more than an inch was followed by the heaviest wind of the month on the 21st, when the only gale was registered.

The mean hourly temperature was more than three degrees lower than the normal and the maximum temperature was below freezing on more than one-half the days of the month. Not a single day showed an average hourly temperature above freezing.

The range of temperature on the 25th was but little less than the range for the entire month.

The mean dew point was more than four degrees lower than usual and the relative humidity was practically normal.

The total precipitation was about three-fourths of the normal and nearly all of it was snow and sleet.

The total wind movement was about a thousand miles less than usual.

The amount of bright sunshine was about thirty per cent more than the normal after allowing for the extra day of the month.

J. E. OSTRANDER, Meteorologist.

H. H. SHEPARD, Observer.

AMHERST, MASS.

BULLETIN No. 423. MARCH, 1924

Meteorological Observations

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Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing	29.90, 31st, 12 P
Minimum reduced to freezing,	28.91, 12th, 4 A
Reduced maximum reading,	30.21, 31st, 12 P.
Reduced minimum reading,	29.22, 12th, 4 A.
Mean semi-daily reduced	29.772
Monthly range	0.98

Air Temperature. In Degrees Fahr.

Highest	58.0, 23rd, 5 P.
Lowest	8.0, 2d, 7A.
Mean hourly	34.4
Mean of means of max. and min.	34.4
Mean sensible (wet bulb)	29.7
Monthly range	50.0
Highest mean daily	41.7, 28th
Lowest mean daily	24.2, 2d
Mean maximum	43.5
Mean minimum	26.0
Mean daily range	17.5
Greatest daily range	35.0, 23rd
Least daily range	5.0, 11th

Humidity.

Mean dew point	23.4
Mean force of vapor	.190
Mean relative humidity	70.2

Precipitation. In inches.

Total precipitation, in inches	1.05
Total snow, in inches	2¼
Number of days on which .01 inch or more rain fell	6
Days of sleighing	4

Wind.

Total movement	6600m
Greatest daily movement	553m, 12th
Least daily movement	32m, 3rd
Mean daily movement	213m
Mean hourly velocity	8.9m

Maximum pressure per square foot, 20.0 lbs= 63m per hour, 12th, 5 A., N.N.E.

Maximum velocity for 5 minutes, 36m per hour, 28th, 2 P., W.N. W.

Prevailing direction, North Northwest.

Summary.

North Northwest	16 per cent
Northwest	13 " "
North	13 " "
Northeast	10 " "
West Northwest	10 " "
Other directions	38 " "

Weather.

Mean cloudiness observed	44 per cent
Total cloudiness recorded by the Sun Thermometer	79 hours = 21 per cent.
Number of clear days	22
Number of fair days	6
Number of cloudy days	3

Bright Sunshine.

Number hours recorded, 292 = 79 per cent.

Rain, 5th, 7th, 11th, 12th, 26th, 29th, 30th.

Thunder and Lightning, 29th.

Snow 7th, 11th, 12th, 26th, 28th, 29th.

Gales, 57 m., 11th, N. E.; 63m., 12th, N.N.E.; 41m., 13th, N.; 45m., 14th, N. W., 45m., 15th., N. W.; 49m, 16th., N. W.; 46m., 17th; N. W.; 36m., 18th, N. W.; 38m., 19th, N.; 36m , 20th, N.; 39m., 21st, E. N. E.; 35m., 22d., N. E.; 35m., 27th, N N. E.; 59m., 28th, W. N. W.; 41m., 31st, W. N. W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	29.81	29.72	29.795	39.5	4:30 P	19.0	6 A	29.3	26.7	21.5	10.5
2	29.90	29.81	29.875	39.5	4:30 P	8.0	7 A	23.7	24 2	18.5	10.5
3	30.09	29.90	30.016	43.5	2:30 P	18.0	5:30 A	30.7	29.7	26.3	9.5
4	30.20	30.00	30.113	46 0	4 P	17.0	6:30 A	31.5	33.3	26.7	9.7
5	30.00	29.71	29.747	39 0	3 P	33.5	7:30 A	36.3	36.0	34.7	2.1
6	29.89	29.73	29.864	49.5	4 P	34 0	3 A	41 7	39.9	35.5	10.5
7	30.87	29.65	29.731	38.c	0 A	28.0	12 P	33.0	34.6	31.7	3.7
8	29.77	29.64	29.718	34.5	12 P	21.0	6 A	27.3	29.2	26.0	9.7
9	29.94	29.77	29.918	52.5	4 P	34.5	0 A	43.5	40.4	33 5	10.5
10	29.91	29.68	29.828	42.0	1 P	30.5	2:30 A	36.3	36.5	33.0	7.0
11	29 68	29.25	29.408	38.0	11:30 A	33.0	10 P	35.5	35.3	33.5	4.0
12	29.51	29.22	29.376	38.0	3 P	30 0	3 A	34 0	34.5	31.3	9.5
13	29.59	29.47	29.548	39.5	4 P	24 0	12 P	31.7	32.6	27.0	11.7
14	29.57	29.42	29.495	34.5	4:30 P	19.0	7 A	26.7	25.5	20.5	11.3
15	29.45	29.33	29.408	31 0	1 P	21.0	5 A	26.0	25.0	21.7	7.4
16	29.58	29.39	29.482	32.0	2 P	20.0	4 A	26.0	25.8	22 0	10.4
17	29.71	29.58	29.676	38 0	2 P	23.5	6 A	30 7	30.8	27.0	11.4
18	29.72	29.63	29.708	44.0	4:30 P	27 0	6 A	35 5	34 5	31.3	11.0
19	29.78	29.69	29.741	41.5	1:30 P	23 0	7 A	32.3	32.9	29.3	11.5
20	29.88	29.77	29.873	53.0	4:30 P	25.5	7 A	39.3	37.5	31.3	11.6
21	29.88	29.76	29.801	44.0	4 P	31.5	0:30 A	37.7	38.5	35 5	5.7
22	30.03	29.85	29.986	50.0	4 P	33.0	12 P	41.5	40.7	33.7	11.3
23	30 06	29.94	30.007	58.0	5 P	23.0	6:30 A	40.5	40.0	33.5	11.9
24	30.00	29.90	29.965	54.0	3 P	25.5	6:30 A	39.7	40.3	33.3	11.4
25	30 13	30.03	30.086	45 0	4 P	26 5	6 A	35.7	35 8	31.3	11.6
26	30.03	29.75	29.839	42.0	2 P	25.5	6 A	33.7	33.2	28.5	6.4
27	29.84	29.73	29.801	50.5	5 P	32.0	2 A	41.3	39.2	34.0	11.2
28	29.84	29.70	29.796	54.5	2:30 P	30.0	3:30 A	42 3	41.7	33.7	10.9
29	29 86	29.47	29.756	48.0	0:30 P	29 5	7 A	38.7	38.3	31.5	8.6
30	29.64	29.43	29.545	49.5	3:30 P	33.5	1 A	41.5	39.2	34.7	9.0
31	30.21	29.64	29.944	40.0	4:30 P	27.0	12 P	33.5	33.9	27.5	10.5

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	12.5	.134	60.0	N.W.	150	2.0	20	9 P				
2	9.0	.119	60.0	N.N.W.	88	1.0	14	12 M				
3	23.5	.152	88 0	S.S.W.	32	0.0						
4	21.0	.174	72.0	S.	98	4 0	28	4 P				
5	33.5	.205	95.5	S.S.W.	55	0.0	—		6 A	1 P	.22	
6	31.5	.229	78.5	N.N.W.	126	1.5	17	3 P				
7	28.0	.192	82.5	S.W.	41	2.0	20	9 P	11 A	8 P	.10	1
8	18.0	.162	64.5	N.N.W.	198	3.0	24	1 P				
9	28.0	.220	69.5	N.	284	3.0	24	1 A				
10	29.0	.204	79.0	E.	83	2.5	22	12 P				
11	31.0	.202	85 5	N.E.	425	16.0	57	12 M	6 A	12 P	.12	$\frac{3}{4}$
12	26.5	.196	74.0	N.N.E.	553	20.0	63	5 A	0 A	0 A	.07	$\frac{1}{4}$
13	20.0	.170	64.0	N.N.W.	385	8.5	41	10 A				
14	11.5	.128	61.5	N.W.	286	10.0	45	2 P				
15	12.0	.136	57.5	N.W.	301	10.0	45	9 P				
16	12.0	.138	57.5	W.N.W.	391	12.0	49	2 P				
17	22.0	.164	73.5	W.N.W.	369	10.5	46	3 P				
18	27.0	.191	79 0	N.W.	276	6.5	36	12 M				
19	22.0	.186	66.0	N.N.W.	207	7 0	38	7 A				
20	23.5	.204	63.5	N.	176	6.5	36	11 A				
21	31.0	.234	75.0	N.E.	223	7.5	39	6 P				
22	25.5	.234	60.0	N E.	274	6 0	35	10 A				
23	27.5	.216	71.5	E.N.E.	82	0.5	10	1 P				
24	25.0	.230	63.0	N.N.E.	121	4.0	28	1 P				
25	25.5	.200	69.5	N.	113	0.5	10	9 A				
26	23.0	.176	72.5	E.S.E.	111	2.0	20	4 P	2 P	10 P	T	T
27	28.5	.228	70.0	N.	238	6 0	35	12 M				
28	24.0	.242	57.5	W.S.W.	261	17.5	59	4 P	4 A	6 A	T	$\frac{1}{4}$
29	25.0	.204	68.0	S.S.E.	99	2.0	20	11 P	2 P	12 P	.49	T
30	30.0	.226	74.5	S.W.	143	3.0	24	5 P	0 A	1 A	.05	
31	20 0	.173	64.0	W.N.W.	411	8.5	41	1 P				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was greatly affected by the generally low barometric pressure and large wind movement. Gales were registered on nearly one-half of the days of the month and from the 11th to the 22d inclusive a wind pressure of six pounds or more was recorded each day. During this time the barometer was much below the normal pressure and the daily wind movement was exceptionally large. Practically no precipitation occurred during the period.

The transition from winter to spring was rather gradual but none the less quite complete when the month closed.

The records of the several weather elements show the following features : the mean barometer was one of our lowest monthly records for this feature. The range of pressure was much less than normal, due to the low maximum pressure for the month. Nearly all of the wind was near the north.

The mean temperature was nearly normal and the range rather small. After the first few days the minimum temperatures were generally above 20 degrees and below 32 degrees.

The mean dew point and relative humidity were both considerably lower than usual.

The total precipitation was about one-third of the normal and more than one-half of it fell during a moderate thunder storm on the night of the 29th. There was but little snow during the month.

The wind movement was nearly a thousand miles more than usual due to the numerous gales mentioned above.

The amount of sunshine was extremely large and only three days were recorded as cloudy.

J. E. OSTRANDER, Meteorologist.

H. H. SHEPARD, Observer.

Massachusetts Agricultural College,
AMHERST, MASS.

BULLETIN No. 424. APRIL, 1924

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing	30.10, 6th, 6 A
Minimum reduced to freezing,	29.13, 7th, 9 A
Reduced maximum reading,	30.41, 6th, 6 A.
Reduced minimum reading,	29.43, 7th, 9 A.
Mean semi-daily reduced	29.954
Monthly range	0.98

Air Temperature. In Degrees Fahr.

Highest	71.0, 28th, 4 P.
Lowest	22.0, 1st, 5:30A.
Mean hourly	44.3
Mean of means of max. and min.	44.2
Mean sensible (wet bulb)	38.6
Monthly range	49.0
Highest mean daily	53.0, 27th
Lowest mean daily	29.8, 1st
Mean maximum	53.9
Mean minimum	34.4
Mean daily range	19.5
Greatest daily range	37.0, 4th
Least daily range	5.0, 18th

Humidity.

Mean dew point	31.9
Mean force of vapor	.286
Mean relative humidity	66.9

Precipitation. In inches.

Total precipitation, in inches	4.54
Total snow, in inches	8.0
Number of days on which .01 inch or more rain fell	11
Days of sleighing	2

Wind.

Total movement	5830m
Greatest daily movement	364m, 2d
Least daily movement	78m, 29th
Mean daily movement	195m
Mean hourly velocity	8.1m

Maximum pressure per square foot, 23.5 lbs= 69m per hour, 14th, 3 P., N. W.

Maximum velocity for 5 minutes, 36m per hour, 14th, 3 P., N. W.

Prevailing direction, North Northwest.

Summary.

North	17 per cent
Northwest	13 " "
West	13 " "
South Southwest	10 " "
Other directions	47 " "

Weather.

Mean cloudiness observed	47 per cent
Total cloudiness recorded by the Sun Thermometer	114 hours = 28 per cent.
Number of clear days	16
Number of fair days	11
Number of cloudy days	3

Bright Sunshine.

Number hours recorded, 288 = 72 per cent.

Rain, 6th, 7th, 8th, 9th, 18th. 19th, 20th, 21st, 22d, 30th

Snow 1st, 2d, 8th.

Thunder and Lightning, 22d.

Gales, 43m., 1st, N. N. W.: 41m., 6th, E.N.E.; 69m., 14th, N. W.: 45m., 19th, N. W.: 35m, 22d, N.: 42m., 23d, N. W.; 51 m., 24th, N. N. W.; 35m., 25th, N. N. E.; 45m., 26th, N.; 35m., 27th, N. N. W.: 36m., 28th, S. S. W.; 35m, 30th, S.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.29	29.79	30.127	37.0	12 M	22.0	5:30 A	29.5	29.8	27.3	7.3
2	30.01	29.56	29.785	36.5	3 P	28.0	6 A	32.3	31.8	29.7	11.0
3	30.29	30.01	30.236	47.5	5 P	26.5	6 A	37.0	37.6	33.5	12.3
4	30.31	30.19	30.277	62 0	4 P	25.0	6 A	43 5	43.3	36.7	11.8
5	30.40	30.31	30.348	68 0	3 P	33.0	6:30 A	50.7	50.7	42.5	12.2
6	30.41	29.86	30.218	49.5	2:30 P	36.0	5 A	42.7	41.6	38.7	8.6
7	29.86	29.43	29.458	50.c	10 A	38.0	1 A	44.0	41 7	39.5	7.3
8	29.92	29.48	29.728	40.0	1 P	34.0	7:30 A	37.0	38.0	34.c	6.3
9	30.01	29.92	29.986	56 0	3 P	33.5	7:30 A	44.7	42.9	37.3	9.6
10	29.96	29.86	29.886	55.0	3 P	36.5	3 A	45.7	45.2	39.7	9.7
11	30 06	29.87	29.949	51.0	2 P	33 0	12 P	42.0	42.9	35.5	11.9
12	30.13	29.92	30.026	55.0	3:30 P	27.0	4 A	41.0	41.5	34.5	9 6
13	29.94	29.76	29.864	61.0	5:30 P	40.0	6:30 A	50 5	52.6	46.0	10.6
14	29.88	29.63	29.724	61.0	1 P	41.0	12 P	51.0	51.8	44.3	11.1
15	30.11	29.88	30.024	52.0	5 P	34 0	5:30 A	43.0	43.3	35.5	12.5
16	30.22	30.07	30.168	55 0	4 P	26.5	6 A	40 7	41.2	34.7	12.9
17	30.30	30.20	30.260	62.0	4 P	28.0	6 A	45 0	44.8	35.7	12 9
18	30.23	29.67	30 004	46.0	11 P	41.0	6 P	43 5	42.9	38.5	0.0
19	29.78	29.59	29.656	56.0	1 P	40.0	6 A	48.0	47.6	41.0	11.6
20	29.84	29.75	29.797	43.0	10 A	34.0	6 A	38.5	39.7	35.5	4.1
21	30.01	29.84	30.001	55.0	2 P	34.5	6 A	44.7	46.0	39.5	11.0
22	29 94	29.46	29.638	44.0	1 A	38.0	6 A	41.0	41.4	40.3	0.4
23	29 96	29.57	29.798	55 0	4 P	39 0	6 A	44.7	44.3	39.0	8 6
24	30.01	29.83	29.946	58.0	4 P	36 0	5:30 A	47.0	48.9	39.5	12.8
25	30.20	29.87	30.008	53.0	12 M	34.0	5 A	43.5	45.0	38.5	9.0
26	30.29	30.19	30.248	59.5	3 P	39 0	5:30 A	49.3	49.0	43.0	12.6
27	30.21	29.90	30 046	68.0	5 P	34.5	6 A	51.3	53.0	41.5	12.8
28	29.93	29.78	29.897	71.0	4 P	36.5	6 A	53 7	52.9	43.0	13.2
29	29 84	29.73	29.771	52.0	6 P	37.0	2 A	44.5	45.8	43.7	6.2
30	29.87	29.59	29.756	64.0	3:30 P	47.0	7 A	55.5	53.0	48.5	7.8

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	23.5	.158	81.0	E.N.E.	154	1.5	17	11 P	3 P	12 P	.40	5½
2	27.0	.172	87.0	N.W.	364	9.0	43	1 P	0 A	7:30 A	.25	2½
3	26.0	.227	61.5	W	185	3.0	24	2 P				
4	28.5	.288	60.0	S.S.W.	91	1.0	14	5 P				
5	36.5	.332	68.5	S.	116	0.5	10	8 P				
6	36.5	.246	90 0	E.S.E.	124	8.5	41	10 P	12 M	12 P	.60	
7	37.0	.262	83.5	N.	317	5.5	33	5 A	0 A	6 P	.87	
8	29.0	.218	75.5	N.	316	5 5	33	10 A	5 A	4 P	.07	T
9	33.0	.244	79.5	E.	142	1.5	17	2 P	6 P	10 P	.03	
10	34.0	.286	71.5	N.W.	149	2.0	20	2 P				
11	28.0	.252	60 5	N.	196	5.0	32	2 P				
12	28.5	.244	67 5	S.S.W.	162	5.0	32	5 P				
13	39.0	.400	61.5	S.S.W.	131	3.0	24	10 P				
14	37.0	.368	60 0	W.S.W.	358	23.5	69	3 P				
15	24.5	.207	50.0	N.	229	6.0	35	3 P				
16	25.0	.251	55 0	N.N.E.	152	5.5	33	2 P				
17	24.5	.274	49.5	W	133	4.5	30	7 P				
18	33.5	.262	76.0	S.S.E.	136	1.5	17	11 A	11 A	12 P	1.00	
19	33.0	.329	59.5	N.	346	10.0	45	4 P	0 A	4:30 A	.50	
20	28.5	.246	63 5	N.W.	138	1.0	14	10 A	10 A	12 P	.10	
21	32.5	.290	65.0	N.N.W	142	3.5	26	7 P	8 P	12 P	T	
22	39.5	.254	96.0	N.E.	117	6.0	35	2 P	0 A	4 P	.52	
23	30.5	.298	57.0	W.N.W.	335	9.0	42	3 P				
24	27.0	.333	45.0	W.	271	13.0	51	2 P				
25	28.0	.301	51.5	N.E.	238	6 0	35	2 P				
26	35.5	.348	60.0	N.N.E.	277	10 0	45	2 P				
27	31.5	.360	53.0	N.W.	166	6.0	35	12 M				
28	33 5	.362	55.0	W.	103	6.5	36	4 P				
29	40.5	.316	82 0	E S.E.	78	0.0	—					
30	45.5	.380	81.0	S.	173	6.0	35	3 P	4 P	12 P	.20	

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was generally seasonable although the advance of Spring was rather slow. A large wind movement with numerous gales largely offset the heavy precipitation so that conditions for farming were not far from normal. The last part of the month was free from frost, and vegetation made considerable progress.

The mean barometer was rather low and the changes in pressure not as marked as the large wind movement seemed to warrant. The total range in pressure occurred however in but little more than a day.

The mean hourly temperature was two degrees lower than usual and the range of temperature small for the time of year.

The lowest temperature came on the morning of the 1st, and the maximum very near the last of the month.

The mean dew point and relative humidity were both below their respective normals.

The total precipitation was fifty per cent more than normal and nearly all of it occurred during three well defined storms. The first of these was a snowstorm on the 1st-2nd which was the largest snowfall so far this year; The other two storms each showed about one and one-half inches of rain.

The total wind movement was nearly ten per cent more than normal and on six days more than three hundred miles in twenty four hours was registered.

The amount of sunshine was very large and only three days were classed as cloudy.

J. E. OSTRANDER, Meteorologist.

H. H. SHEPARD, Observer.

Massachusetts Agricultural College
AMHERST, MASS.

BULLETIN No. 425. MAY, 1924

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing	29.94, 11th, 8 A.
Minimum reduced to freezing,	28.96, 1st, 6 A.
Reduced maximum reading,	30.24, 11th, 8 A.
Reduced minimum reading,	29.26, 1st, 6 A.
Mean semi-daily reduced	29.851
Monthly range	0.98

Air Temperature. In Degrees Fahr.

Highest	74.0, 17th, 4 P.
Lowest	33.0, 23rd, 5:30 A.
Mean hourly	53.5
Mean of means of max. and min.	53.2
Mean sensible (wet bulb)	47 6
Monthly range	41.0
Highest mean daily	62.4, 17th, 18th
Lowest mean daily	44.1, 10th
Mean maximum	63.0
Mean minimum	43 4
Mean daily range	19.6
Greatest daily range	34.5, 23d
Least daily range	5.0, 10th

Humidity.

Mean dew point	42.3
Mean force of vapor	.403
Mean relative humidity	70.3

Precipitation. In inches.

Total precipitation, in inches	2.21
Number of days on which .01 inch or more rain fell	15

Wind.

Total movement	5135m
Greatest daily movement	314m, 18th
Least daily movement	45m, 20th
Mean daily movement	166m
Mean hourly velocity	6.9m

Maximum pressure per square foot, 13.5 lbs= 52m per hour, 18th, 3 P., S.

Maximum velocity for 5 minutes, 30m per hour, 18th, 3 P., S.

Prevailing direction, West.

Summary.

South Southwest	19 per cent
Southwest	16 " "
West	13 " "
Northwest	10 " "
North Northeast	10 " "
Other directions	32 " "

Weather.

Mean cloudiness observed	54 per cent
Total cloudiness recorded by the Sun Thermometer	188 hours = 42 per cent.
Number of clear days	11
Number of fair days	11
Number of cloudy days	9

Bright Sunshine.

Number hours recorded, 265 = 58 per cent.

Rain. 3d, 4th, 6th, 9th, 10th, 11th, 12th, 15th, 16th, 18th, 20th, 21st, 22d, 24th, 27th, 28th.

Thunder and Lightning. 4th, 24th.

Frost 2d.

Gales. 39m., 1st, W.N.W.; 36m., 2d, W.S.W.; 41m., 3d, S.S.W.; 48m., 4th, W.S.W.; 35m., 5th, N.W.; 40m., 9th, E.N.E.; 40m., 12th, N.N.W.; 39m., 15th, W.N.W.; 52m., 18th, S.; 47m., 19th. N.W.; 47m., 24th, S.S.W.; 40m., 30th, N.W.; 45m., 31st, N.W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	29.78	29.26	29.500	60.5	2 P	44.0	12 P	52.3	52.1	46.7	7.9
2	30.02	29.80	29.910	64.0	2 P	34.0	5 A	49 0	50 0	41.5	12.5
3	30.06	29.81	29.952	68.5	3 P	40 5	6 A	54.5	53.8	44.7	10.4
4	29.89	29.61	29.721	61 0	11:30 A	46.0	12 P	53 5	52.7	46.3	9 6
5	29.97	29.89	29.954	63 5	4:30 P	38.0	6 A	50.7	53.0	44.5	12.9
6	30.03	29.97	30.008	64.5	3:30 P	44.0	9 A	54 3	52.5	45.0	9.2
7	30.10	29.97	30.046	72.0	5 P	39 0	6 A	55.5	57 7	49.5	12.8
8	30.00	29.80	29.857	69.5	2 P	53.0	6 A	61.3	61.3	55 5	5.0
9	30.10	29.82	30.024	58 0	0 A	42.0	12 P	50.0	47.3	43.0	0.0
10	30.22	30.10	30.213	46.5	5 P	41.5	4 A	44.0	44.1	43.0	0.0
11	30.24	30.08	30.182	52.0	1:30 P	42 0	1 A	47.0	46.3	43.0	2.1
12	30.08	29.63	29.758	49.0	3 P	42 0	3 A	45 5	45.1	42.7	0 0
13	29.89	29.62	29.758	59.0	6 P	42 0	5 A	50 5	51.2	48.3	9.5
14	29.92	29.76	29.869	72.0	3 P	43 5	3 A	57.7	59.9	55.7	11.4
15	29.88	29.65	29.776	67 0	0:30 P	50.0	12 P	58 5	59 3	53.5	12.1
16	29 88	29.74	29.820	64.0	5:30 P	46 0	5 A	55 0	54.3	48.7	8.6
17	29 85	29.78	29.826	74.0	4 P	49 0	6 A	61.5	62.4	52 7	13 1
18	29.84	29.57	29.722	72.5	2 P	53.0	5 A	62 7	62 4	55.7	12.3
19	30.03	29 72	29.981	59.5	2 P	47.5	6 A	53 5	53.6	42.5	12.2
20	30.04	29.90	29 966	48.5	6 P	42.5	12 P	45.5	45 6	43.3	0.0
21	29 90	29.73	29.798	57.5	3:30 P	41.5	5 A	49.5	49.5	45.3	7.8
22	29 89	29.72	29.791	62.0	4 P	41.0	12 P	51.5	51.8	43.0	12.7
23	29 97	29.89	29 956	67.5	3:30 P	33.0	5:30 A	50.3	54.1	47.5	11 4
24	29 96	29 58	29.709	70.0	1 P	51.0	6 A	60.5	59.4	56.0	4.3
25	29.78	29 63	29.677	59.5	2 P	44.0	12 P	51.7	52.6	42.5	11.9
26	30.00	29.78	29.884	60.0	2 P	35 5	5 A	47.7	50.4	45.0	12.6
27	30.02	29.80	29 925	63.0	0:30 P	38.0	5 A	50.5	52.3	50 5	5.4
28	29.80	29.67	29.709	72.5	2:30 P	53.5	4 A	63 0	59.9	56.0	5.6
29	29.72	29.55	29.637	70.0	11:30 A	45.5	5:30 A	57.7	59.4	50.3	8.1
30	29.76	29.56	29.696	60.0	3 P	44.0	12 P	52.0	52.9	45.3	10.0
31	29.82	29.72	29.754	64.5	1:30 P	38.0	5 A	51.3	53.1	47.5	14.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Total in Inches. Snow.
1	42.0	.362	77 0	W.N.W.	220	7.5	39	5 P				
2	32.5	.338	54.5	S.W.	215	6.5	36	3 P				
3	39.0	.377	63.5	S.W.	181	8.5	41	4 P	4 A	6 A	.02	
4	43.0	.346	81.0	W.	268	11.5	48	1 P	3 A	8 A	.18	
5	35.0	.396	52.0	N.W.	243	6.0	35	1 P				
6	41.5	.354	75.5	N.N.W.	105	2.5	22	2 P	5 A	9 A	.04	
7	43.0	.454	61.5	E.S.E.	100	1.0	14	1 P				
8	52.5	.503	79.0	E.	126	2.0	20	2 P				
9	39.5	.309	78.5	N.N.E.	206	8.0	40	4 P	10 A	12 P	.50	
10	40.5	.296	87.0	N.E.	99	0.0	—		0 A	12 P	.08	
11	40.5	.306	81.5	N.N.E.	81	0.0	—		0 A	12 P	.15	
12	40.5	.296	85 0	N.N.E.	150	8.0	40	9 A	0 A	5 P	.20	
13	45 0	.385	79.0	W.	103	2.5	22	12 M				
14	52.0	.522	75 5	S.S.W.	170	5.0	32	3 P				
15	51.5	.558	82.5	W.S.W.	265	7.5	39	1 P	1 A	2:30 A	.19	
16	44 5	.405	73 5	S.W.	46	0.0	—		3 P		T	
17	45.5	.546	55.0	S W.	146	4.5	30	12 M				
18	52.0	.525	75.0	S.S.W.	314	13.5	52	3 P	7:30 P	10 P	.03	
19	32.5	.357	53.0	N.W.	301	11.0	47	11 A				
20	40 0	.312	80.0	S.S.W.	45	0.0	—		6 A	10 A	.01	
21	40.5	.347	74.5	S.	64	0.0	—		7:30 P	12 P	.02	
22	34.0	.357	56.0	N.	140	2 5	22	1 P	0 A	1 A	.02	
23	39.0	.434	56.0	S.W.	91	4.0	28	3 P				
24	55.0	.472	86.0	S.S.W.	263	11.0	47	1 P	5 A	11 P	.66	
25	31 0	.366	49.0	N.N.W.	223	4.0	28	4 P				
26	39.0	.369	64.5	W.	143	4.5	30	2 P				
27	48.0	.403	84.0	S.S.W.	131	4.5	30	7 P	12 M	12 P	.08	
28	55 0	.473	91.5	S.S.W.	124	0.5	10	2 P	0 A	5 P	.03	
29	40.0	.505	52 0	W.	124	3.0	24	12 M				
30	37.5	.393	57.0	N.W.	217	8.0	40	3 P				
31	40.0	.438	56.5	W.N.W.	231	10.0	45	10 A				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was disappointing in general although it is difficult to say in what respect. It is true that the mean temperature was rather low but it was nearly the same as in 1915 and 1920. It was much warmer than the abnormally cold May of 1917. It was rainy and cloudy but the total rainfall was only about two-thirds of the normal and the hours of sunshine more than usual. No frost of any consequence occurred and yet it was bordering on frost three days of the last week of the month and, in fact, frost was noted on the grounds in neighboring places. The seasonal advance was slow and normal conditions at the beginning of the month, changed to a backward condition of about ten days at the close of the month.

On examining the records we find that the mean barometer was unusually low and although the wind movement was rather large the changes in barometric pressure were not especially marked. The shifting of wind direction was more frequent than usual.

The temperature record shows a mean hourly temperature about four degrees lower than normal. This resulted in making it rather uncomfortable without heat in buildings as the normal May temperature is very close to a suitable one for comfort.

The maximum temperature was thirteen degrees lower than the normal and the minimum nearly three degrees higher than the normal, giving a very small range. The maximum temperature rose above 70 degrees on only seven days of the month, while normally we expect records above 80 degrees several times in May.

The total precipitation was small and fell during many scattered storms of no severity, excepting that of the 24th, when for a short time there was a very heavy down pour.

The mean dew-point was rather low and the relative humidity practically normal.

There was nearly an equal number of clear, fair and cloudy days.

J. E. OSTRANDER, Meteorologist.

H. H. SHEPARD, Observer.

Massachusetts Agricultural College.
AMHERST, MASS.

BULLETIN No. 426. JUNE, 1924

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing	30.04, 11th, 6 A.
Minimum reduced to freezing,	29.28, 29th, 4 P.
Reduced maximum reading,	30.34, 11th, 6 A.
Reduced minimum reading,	29.56, 29th, 4 P.
Mean semi-daily reduced	.29.928
Monthly range	0.78

Air Temperature. In Degrees Fahr.

Highest	87.0, 24th, 1 P.
Lowest	39.5, 1st, 4:30 A.
Mean hourly	64.8
Mean of means of max. and min.	64.3
Mean sensible (wet bulb)	58.5
Monthly range	47.5
Highest mean daily	75.8, 24th, 29th
Lowest mean daily	54.0, 8th
Mean maximum	76.3
Mean minimum	52.3
Mean daily range	24.0
Greatest daily range	36.0, 17th
Least daily range	11.0, 5th

Humidity.

Mean dew point	54.7
Mean force of vapor	.604
Mean relative humidity	73.8

Precipitation. In inches.

Total precipitation, in inches	1.28
Number of days on which .01 inch or more rain fell	9

Wind.

Total movement	3190m
Greatest daily movement	239m, 29th
Least daily movement	58m, 4th, 28th
Mean daily movement	106m
Mean hourly velocity	4.4m

Maximum pressure per square foot, 8.5 lbs= 41m per hour, 29th, 5 P., S.W.

Maximum velocity for 5 minutes, 21m per hour, 29th, 3 P., S.W.

Prevailing direction, Soutwest.

Summary.

South Southwest	27 per cent
South	10 " "
West	13 " "
North Northwest	10 " "
North	10 " "
Other directions	33 " "

Weather.

Mean cloudiness observed	40 per cent
Total cloudiness recorded by the Sun Thermometer	144 hours = 32 per cent.
Number of clear days	11
Number of fair days	15
Number of cloudy days	4

Bright Sunshine.

Number hours recorded, 313 = 68 per cent.

Rain, 3d, 4th, 6th, 8th, 9th, 13th, 14th, 21st, 25th, 27th, 29th.

Thunder and Lightning, 3rd, 4th, 25th, 29th.

Gales, 35m., 1st, W.; 41m., 29th, S.W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	29.65	29.60	29.828	69.0	3:30 P	39 5	5:30 A	54.3	57.3	52.3	13 4
2	29.91	29.76	29.803	73.0	3 P	47.0	5 A	60.0	60.8	52.3	12.4
3	29 95	29.85	29.907	71.0	3 P	42.0	6 A	56.5	58.9	55.0	8.4
4	29.90	29.78	29.833	65 0	3:30 P	54.0	5 A	59.5	58.5	57.0	3.0
5	29.99	29.90	29.971	74.0	2:30 P	51.0	7 A	62.5	62.3	55.3	10.0
6	30.00	29.83	29 924	71.5	8 A	45.0	5 A	58.3	58.1	54.0	8.0
7	29 93	29.82	29.878	71.0	3 P	54.0	12 P	62.5	62.3	55.0	11.5
8	29.98	29.92	29.791	60.0	12 M	47.0	3:30 A	53.5	54.0	50.0	5 6
9	30 14	29 97	30.083	75.0	4 P	46.0	5 A	60.5	61.1	52.3	13.0
10	30.30	30.14	30.305	69.5	2 P	47.0	4:30 A	58.3	59.1	53.3	10.7
11	30.34	30.20	30.302	71.5	2 P	45.0	5 A	58.3	58.0	51.7	11.5
12	30.30	30.08	30.183	69.0	2 P	46.0	4 A	57.5	58.0	53.0	9.5
13	30.08	29.91	29.997	68.0	2 P	56.0	4 A	62.0	61.8	59.0	8.0
14	29 91	29.86	29.902	69.0	3 P	56.0	4 A	62.5	60.9	56.7	8.2
15	29.87	29 76	29.814	79.0	4 P	48 5	3:30 A	63.7	66.2	59.0	12.2
16	29 96	29.77	29.832	78.5	3 P	56.0	5 A	67.3	65.2	59.3	9.0
17	30.01	29.88	29.950	80.5	4 P	44 5	5 A	62.5	65.5	59.3	13 5
18	29.95	29.84	29.884	85.5	5 P	62 5	3 A	74 0	71.1	65.0	9 8
19	29.97	29 85	29.912	84.0	4 P	53.5	5 A	68.7	69.7	62.3	12 8
20	29.93	29.87	29.922	84.5	4:30 P	56 0	4 A	70.3	69.0	57.7	11.6
21	29 97	29.78	29.838	77.5	6 P	57.5	7 A	67.5	69.3	62 5	5.3
22	29 97	29.84	29 944	86.5	4:30 P	59 5	5:30 A	73.0	74 3	65.0	13.7
23	30.02	29.80	29.898	86.5	1 P	53.5	5 A	70.0	71.5	64.7	10.6
24	29.86	29 79	29.856	87.0	1 P	64 5	4 A	75 7	75.8	66.0	12.7
25	29.85	29.63	29.730	82.5	11 A	60.0	12 P	71.3	70.2	57.5	5.4
26	29.98	29.82	29.962	81.5	4:30 P	53.0	5 A	67.3	68.2	62 5	13 2
27	30.03	29.96	30.000	72.0	6 P	52.5	5 A	62.3	64.0	59.0	11.8
28	29.96	29.83	29.870	83.0	4:30 P	51.0	5:30 A	67.0	68.5	61.7	12.8
29	29.86	29.56	29.612	86.0	4:30 P	63 5	4 A	74.7	75.8	70.5	12.0
30	30.01	29.74	29.937	78.0	4 P	56.0	12 P	67.0	67.0	56.5	13.7

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	44 5	.532	55 5	W.	164	6.0	35	3 P				
2	45.5	.512	00.5	N.E.	84	2.0	20	3 P				
3	52.0	.500	78.0	S.S.W.	122	5.0	32	12 M	11:30 A	1 P	T	
4	56.0	.485	92.5	E.	58	0.0	—		3:30 A	11 P	.35	
5	52.5	.495	79.5	N.	62	1.0	14	10 A				
6	51.0	.478	77.5	S.S.W.	103	4.0	28	2 P	1 P	4:30 P	.14	
7	52.5	.510	75.0	N.N.W	196	4 0	28	10 A				
8	43.5	.424	75.0	S.S.W.	107	1.5	17	5 A	2 P	6 P	.15	
9	47.5	.494	65.5	E.S.E.	86	0.5	10	6 P	6 P	9 P	.02	
10	50.0	.468	78.5	S.S.E.	63	1.0	14	3 P				
11	46.5	.486	66 0	S.S.W.	94	3.5	26	4 P				
12	50.0	.510	79 5	S.S.W.	109	1.5	17	10 A				
13	57.0	.548	86.5	S.S.W.	67	0.5	10	7 A	8:30 P	11 P	.01	
14	54.5	.517	82 0	N.N.E.	112	1.0	14	4 P	8 A	3:30 P	.03	
15	54.0	.632	64.0	N.	171	3.5	26	7 A				
16	57.5	.568	83 5	S.W.	83	1.5	17	3 P				
17	55.0	.632	70.0	S.	99	2.5	22	5 A				
18	64.0	.676	88.0	W	98	1.0	14	3 P				
19	58 0	.691	71.0	N.N.W.	77	0.5	10	7 A				
20	50.5	.668	55.5	S.S.E.	68	2.5	22	6 P				
21	00.5	.664	81.5	W.	100	1.5	17	12 M	5:30 A	3 P	.44	
22	61.0	.800	67.0	N.	124	1.0	14	2 P				
23	61.5	.738	74.5	S.S.W.	96	3.0	24	12 M				
24	60.0	.886	60.5	W.N.W.	123	3.5	26	2 P				
25	64 0	.708	86.0	W.N.W.	122	4.0	28	3 P	11 A	6 P	.12	
26	58.5	.704	71.0	S.W.	60	1.0	14	4 P				
27	56.0	.584	76.5	S.	66	2.5	22	2 P	1:30 P	2:30 P	T	
28	59 0	.655	77.5	S.	58	1.5	17	11 P				
29	67.0	.944	71 0	S.S W.	239	8.5	41	5 P	2:30 A	9:30 P	.02	
30	51.0	.585	64.5	N.N.W.	179	1.5	17	4 A				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was generally fair with but little precipitation and cloudiness. Following the dry conditions of May, by the end of the month the ground was without sufficient moisture for the growing crops. The month was cooler than usual and the daily maximum temperatures did' not reach the eighties until after the middle of the month, when they went above 80 degrees for the first time this year. The first half of the year, however, has been passed without the temperature reaching 90 degrees.

The barometer records were nearly normal although the mean was slightly below the average for the month of June. The total wind movement was small and only two gales were registered. The wind direction was more variable than usual.

The mean temperature was more than a degree below the normal, and the minimum was above the average value. Owing to the low maximum record the range of temperature was nearly five degrees less than usual.

The mean dew point and relative humidity were both near their respective normals.

The total precipitation was practically forty per cent of the normal and many of the storms were so small that they scarcely moistened the ground.

The amount of sunshine was large and there were only four days classed as cloudy.

Owing to the peculiar conditions that have prevailed the season is very backward. This is especially noticeable in the poor condition of corn and somewhat less so in the lateness of tobacco and onions.

J. E. OSTRANDER, Meteorologist.

H. H. SHEPARD, Observer.

Massachusetts Agricultural College
AMHERST, MASS.

BULLETIN No. 427. JULY, 1924

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing	29.94, 7th, 8 A.
Minimum reduced to freezing,	29.22, 17th. 12M.
Reduced maximum reading,	30.23. 7th, 8 A.
Reduced minimum reading,	29.51. 17th, 12 M.
Mean semi-daily reduced	.29.948
Monthly range	0.72

Air Temperature. In Degrees Fahr.

Highest	95.5, 29th, 4 P., 30th, 0:30 P.
Lowest	47.0, 26th, 6 A.
Mean hourly	71.1
Mean of means of max. and min.	71.4
Mean sensible (wet bulb)	64.0
Monthly range	48.5
Highest mean daily	78.7, 24th
Lowest mean daily	62.3, 1st
Mean maximum	85.1
Mean minimum	57.7
Mean daily range	27.4
Greatest daily range	41.5, 29th
Least daily range	15.5, 13th

Humidity.

Mean dew point	60.4
Mean force of vapor	.735
Mean relative humidity	73.5

Precipitation. In inches.

Total precipitation, in inches	1.75
Number of days on which .01 inch or more rain fell	4

Wind.

Total movement	3412m
Greatest daily movement	198m, 17th
Least daily movement	33m, 20th
Mean daily movement	110m
Mean hourly velocity	4.6m

Maximum pressure per square foot, 15.5 lbs = 56m per hour, 13th, 1 P., S.W.

Maximum velocity for 5 minutes, 42m per hour, 13th, 1 P., S.W.

Prevailing direction, Southwest.

Summary.

South Southwest	48 per cent
Southwest	10 " "
Northwest	10 " "
West Northwest	10 " "
Other directions	22 " "

Weather.

Mean cloudiness observed	31 per cent
Total cloudiness recorded by the Sun Thermometer	126 hours = 27 per cent.
Number of clear days	16
Number of fair days	14
Number of cloudy days	1

Bright Sunshine.

Number hours recorded, 336 = 73 per cent.

Rain. 9th, 10th, 13th, 17th, 22d, 24th, 25th, 27th, 30th, 31st.

Thunder and Lightning. 9th, 16th, 13th, 17th, 30th, 31st.

Gales. 37m., 10th, S.S.W.; 36m., 13th, S.W.; 45m. 17th, W. S. W.; 39m. 25th, S. W.

DAILY SUMMARY.

Day	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper	Mean Sensible Wet Bulb.	
1	30.06	30.01	30.028	74.0	2 P	50.0	5 A	62.0	62.3	56.5	8.3
2	30 12	30.04	30.103	82.0	4:30 P	57 0	3 A	69.5	68.4	62.0	11.5
3	30.15	30.08	30.128	83.0	4 P	57.5	5 A	70.3	69.3	63.0	9.8
4	30.19	30.12	30.164	85.0	3 P	55.0	5 A	70.3	69.6	64 3	10.0
5	30.20	30.12	30.182	87 0	3 P	54.5	5 A	70.7	71.1	66.0	12.1
6	30 22	30.12	30.178	90.0	4 P	62.0	5 A	76.0	73.6	68.0	9.7
7	30.23	30.11	30.186	91.5	5 P	65.0	5 A	78.3	77.0	71.3	11.5
8	30.18	30.10	30.151	89.0	3 P	69.0	5:30 A	79.0	77.0	72 0	10.5
9	30.10	29 97	30.016	88.5	2 P	70.0	12 P	79.3	76.6	69.5	9.0
10	29 97	29.76	29.848	87.5	1 P	67 0	12 P	77.3	73.8	68.5	9.5
11	29 95	29.90	29 939	81.5	4 P	60.0	4 A	70.7	71.3	59.5	14.0
12	29.98	29.84	29 924	89.0	3 P	54 0	5 A	71.5	74.2	66.7	13.0
13	29.84	29.65	29.702	79.5	2 P	64.0	11 P	71.7	70.1	66.7	4 6
14	29.89	29.78	29.828	80.0	5 P	57.0	12 P	68.5	68.2	58 5	12 7
15	29 96	29.88	29.920	80.5	3 P	47 5	6 A	64.0	65.3	58.5	13 0
16	29.89	29.68	29.772	85 0	3:30 P	53.0	6 A	69.0	71.1	65.5	12.0
17	29 68	29 51	29 606	79.0	10.30 A	59.0	12 P	69 0	68.0	62 7	8.0
18	29.78	29.66	29.706	73.5	4 P	54 0	5 A	63.7	64.3	56 0	13.5
19	29 96	29.78	29.880	81 0	4 P	53.5	5:30 A	67.3	67.4	58 5	13 5
20	30.04	29.96	30.014	89.0	4:30 P	49.5	6 A	69.3	68 8	60.7	12 5
21	30.07	30.00	30 052	89.5	4 P	51.0	5:30 A	70 3	71.1	62.7	11.6
22	30.06	29 95	30.016	81.5	3:30 P	65.0	4 A	73.3	72.8	68.0	6.7
23	29.95	29.78	29.814	89.0	4 P	69.0	12 P	79.0	77.7	69.3	13.3
24	29.80	29.64	29 719	92.0	2:30 P	59 5	5:30 A	75 7	78.7	71.7	12.5
25	29.74	29.53	29.628	83.0	2:30 P	54 0	12 P	68.5	71.5	65.3	7.8
26	30.00	29 74	29.900	82-5	3 P	47-0	6 A	64:7	65.6	56.7	13.0
27	30 16	30-00	30-092	85.5	5P	56.5	6 A	71.0	69 2	57-7	11.6
28	30-21	30.10	30.172	87.5	4 P	50.0	6 A	68.7	69 7	59.7	12.8
29	39.14	29.94	30 024	95.5	4 P	54.0	6 A	74.7	74.9	64.0	12.3
30	29.96	29.78	29.831	95.5	0:30 P	61.0	6 A	78.3	76.4	69.0	9.0
31	29.88	29.78	29.845	82.0	0:30 P	62.0	6 A	72.0	69 4	65.5	7.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	53.0	.532	75 5	S.S.W.	68	2.5	22	4 P				
2	60.0	.634	83 0	S.S.W.	63	0.0	—					
3	60.5	.664	80.5	E. N.E.	55	0.0	—					
4	61.0	.712	76.0	E. N. E.	48	0.0	—					
5	65.0	.694	90.0	S.S.W.	57	1.0	14	3 P				
6	67.0	.754	89.5	S.	49	0.0	—					
7	70.0	.858	85.5	S.S.W.	69	3.0	24	5 P				
8	70.0	.894	82 0	S.S.W.	132	5.0	32	3 P				
9	67.5	.819	83.0	S.S.W.	126	2.5	22	6 P	3 P	6:30 P	T	
10	66.0	.804	81 5	S.S.W.	174	7.0	37	1 P	1:30 P	2:30 P	T	
11	52.5	.728	54.0	W.N.W.	193	4.0	28	9 A				
12	61.5	.872	64 0	S.S.W.	134	3.0	24	3 P				
13	65.5	.724	86.5	S.S.W.	131	15.5	56	1 P	8 A	4 P	.47	
14	52.5	.658	60.0	N.	133	2 0	20	3 P				
15	54.0	.622	68.5	S.W.	54	1.0	14	4 P				
16	62.0	.778	72.0	S.S.W.	120	3.0	24	12 M				
17	60.0	.672	78.0	S S.W.	198	10.0	45	11 A	10:30 A	12 M	.53	
18	50.5	.580	63.0	W.N.W.	174	4 5	30	1 P				
19	52.5	.654	60.5	N.W.	122	4.0	28	1 P				
20	57.0	.644	74 0	S.W.	33	0.0	—					
21	58 0	.735	68.5	S S.W.	60	2.0	20	8 P				
22	66.5	.772	84.0	S.S.W.	190	5 0	32	11 A	7:30 P		T	
23	65.0	929	66.5	W.N.W	194	2.0	20	12 M				
24	68.0	.999	70.0	S.W.	126	2.5	22	2 P	9 P	10 P	T	
25	62 0	.748	76.0	W.	185	7 5	39	12 M	9 A	11:30 A	T	
26	50.5	.606	62.0	N.W.	59	0.0	—					
27	52.5	.618	64.0	N.	81	0 0	—		4 A	5 A	.06	
28	55 0	.664	65.5	S.S.W.	92	4.0	28	6 P				
29	58.0	.834	59.5	S.S W.	84	0.0	—					
30	65.5	.854	73.5	W.	140	5.0	32	5 P	0:30 P	10 P	T	
31	63.5	.724	81.5	N.W.	68	1.5	17	3 P	0.30 P	6 P	69	

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The small amount of precipitation which occurred during May and June left the soil very dry at the beginning of July. This droughty condition continued up to the last day of this month when a moderate shower occurred which should give some temporary relief.

From the 1st of May up to the 31st of July the total precipitation was only about forty per cent of the normal. June had less rainfall than May and July, up to the last day, had only two showers of about one half inch each.

Our records do not show an equally dry period during the principal growing season of the year. The heavy precipitation during April and the lateness of the season in general, both tended to alleviate the drought.

Aside from the precipitation most of the other weather records were nearly normal. The barometer records were about their average values, the total wind movement was a little less than usual. In the wind direction, however, we had the very unusual feature of a record from a single point of the compass—South Southwest—for practically one-half the time. There were several gales—one of more than fifty miles per hour.

The mean temperature was practically normal while both the maximum and minimum were higher than their respective normals.

The total precipitation was only about forty per cent of the normal including the shower on the last day of the month. The mean dew point and relative humidity were both practically normal.

The amount of bright sunshine was abnormally large and only one day was recorded as cloudy.

J. E. OSTRANDER, Meteorologist.

H. H. SHEPARD, Observer.

...HE
...Agricultural College
...MASS.

BULLETIN No. 428. AUGUST, 1924

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing	29.99, 3rd, 12 P.
Minimum reduced to freezing,	29.16, 26th. 1 P.
Reduced maximum reading,	30.28, 3rd, 12 P.
Reduced minimum reading,	29.45, 26th, 1 P.
Mean semi-daily reduced	29.967
Monthly range	0.73

Air Temperature. In Degrees Fahr.

Highest	97.0, 7th, 1 P.,
Lowest	42.0, 19th, 6 A.
Mean hourly	69.7
Mean of means of max. and min.	70.3
Mean sensible (wet bulb)	62.7
Monthly range	55.0
Highest mean daily	78.8, 7th
Lowest mean daily	60.2, 18th
Mean maximum	83.2
Mean minimum	57.4
Mean daily range	25.8
Greatest daily range	39.0, 3rd
Least daily range	8.0, 12th

Humidity.

Mean dew point	59.5
Mean force of vapor	.683
Mean relative humidity	76.2

Precipitation. In inches.

Total precipitation, in inches	3.11
Number of days on which .01 inch or more rain fell	9

Wind.

Total movement	3282m
Greatest daily movement	194m, 4th
Least daily movement	43m, 3rd
Mean daily movement	106m
Mean hourly velocity	4.4m

Maximum pressure per square foot, 4.5 lbs= 30m per hour, 7th, 2 P., S.W.; 10th, 5P., N.

Maximum velocity for 5 minutes, 24m per hour, 10th, 5 P., N.

Prevailing direction, South, Southwest.

Summary.

Southwest	23 per cent
South	20 " "
South Southwest	16 " "
North Northeast	16 " "
Other directions	25 " "

Weather.

Mean cloudiness observed	33 per cent
Total cloudiness recorded by the Sun Thermometer	149 hours = 35 per cent.
Number of clear days	13
Number of fair days	12
Number of cloudy days	6

Bright Sunshine.

Number hours recorded, 280 = 65 per cent.

Rain, 6th, 7th, 10th, 12th, 17th, 20th, 23d, 25th, 26th, 27th.

Thunder and Lightning, 6th, 7th, 10th, 17th, 20th, 27th.

Gales, None.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.00	29.88	29.946	77.0	4 P	53.0	12 P	65.0	65.8	54.7	12.7
2	30 20	30.00	30.118	76.5	5 P	45 5	6 A	61.0	61.4	53.0	13.0
3	30.28	30.20	30.264	83.5	5:30 P	44.5	6 A	64.0	64 8	57.5	13.0
4	30.28	30.01	30.132	79.5	3:3c P	58 5	5 A	69.0	70.1	64.3	7.8
5	30.01	29.86	29.902	94.0	4:30 P	67.0	6 A	80.5	78.0	68.7	11.6
6	29 90	29.77	29.839	94.5	5 P	63 0	6 A	78.7	77 5	70.5	9.3
7	29.79	29.64	29.737	97.0	1 P	70.5	6:30 A	83.7	78.8	72.3	7.7
8	29.92	29 76	29.892	88.0	4:30 P	61.0	12 P	74 5	74.4	66.5	12.1
9	29.92	29.82	29.876	90.0	3:30 P	53.5	6 A	71.7	73.7	66.5	11.0
10	29 99	29.89	29.950	88.0	2 P	62.5	6:30 A	75.3	73.5	64.7	10.5
11	30 07	29.97	30.060	82.5	2:30 P	60.0	6:30 A	71.3	69 5	62.0	10.0
12	30.06	29.96	30.018	68.0	6 P	60.0	7 A	64.0	63.5	61.5	0.7
13	30.00	29.90	29.963	85.0	3 P	60.0	6 A	72.5	70.1	62.3	9.0
14	30.09	29.91	29.999	81.5	3 P	59.0	12 P	70.3	69.1	60.5	10 0
15	30.18	30.09	30.159	83.0	5:30 P	51.0	6 A	67.0	66.1	59.3	12 5
16	30.16	29.96	30.068	84.5	4 P	48.5	6 A	66.5	67.0	58.7	9.0
17	29 96	29.80	29.840	76.5	4:30 P	60.0	5 A	68 3	67.0	58.5	1.5
18	30.05	29.82	29.938	69.0	2 P	49.5	6 A	59.3	60.2	53.7	8.2
19	30.16	30.05	30.140	79.0	5:30 P	42.0	6 A	60.5	61.1	54.7	12.5
20	30.11	29.84	29.973	77.0	0:30 P	58.5	0 A	67.7	67.5	62.3	4.2
21	30.09	29 84	30.001	83.0	4:30 P	60.0	12 P	71.5	70.0	60.0	11.0
22	30.15	30.01	30.086	84.0	4 P	49 0	6 A	66.5	66.6	58.5	10.7
23	30.02	29 92	29.900	74.5	4:30	59.0	5 A	66.7	64.8	62.3	2.1
24	29.94	29.85	29.911	87.5	4 P	62.0	3 A	74.7	71.7	65.5	8.8
25	29.95	29.90	29.926	76.5	2 P	67.0	12 P	71.7	71.0	67.0	0.7
26	29.90	29.45	29.662	76.0	5 P	61.0	12 P	68.5	67.5	63 5	1.0
27	29.91	29-72	29.814	87.0	4 P	56.5	4 A	71:7	72.5	66.3	11.7
28	29.96	29.75	29.891	86.0	3 P	62.0	12 P	74.0	73.7	65.3	11.6
29	30 06	29.96	30 049	86.0	3 P	54.5	6 A	70.3	70.3	62.7	12.1
30	30-06	29.81	30 012	92.5	5:30 P	57.5	6 A	75.0	75.1	67.3	11.9
31	29.81	29.80	29.866	93.5	3 P	62.0	6 A	77.7	78.0	72.0	11.8

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	49.0	.551	62.5	N.N.E.	118	1.5	17	5 P				
2	47.5	.506	65 0	N.	90	1.0	14	3 P				
3	53.0	.598	67.5	S.S.E.	43	1.0	14	9 P				
4	62.0	.708	77.5	S.	194	3.5	26	1 P				
5	66 5	.838	76.5	S.W.	123	0.0	—					
6	67.5	.894	77.0	S.W.	59	1.0	14	3 P	9:30A	7:30 P	.04	
7	71.0	.884	85.5	S.	109	4.5	30	2 P	2 P	4 P	.27	
8	63.0	.806	71 0	N.N.E.	105	0.5	10	1 P				
9	63.5	.782	78.0	S.W.	88	1.0	14	2 P				
10	63.5	.674	86 5	S.S.W.	98	4.5	30	5 P	5 P	8 P	.14	
11	58.0	.676	72.0	N.N.E.	67	0.0	—					
12	60.0	.578	90.5	E.N.E.	46	0.0	—		5 A	3:30 P	.93	
13	59.0	.665	76.5	S.W.	46	1.0	14	6 P				
14	57.5	.625	75.0	N.E.	119	1.0	14	4 P				
15	55.0	.621	70.0	W.	89	0.0	—					
16	56.0	.596	80.0	S.S.W.	82	1.0	14	3 P				
17	53.0	.647	61.5	S.W.	113	0.5	10	9 P	10:30A	10:30P	.06	
18	50.5	.492	73.0	N.N.W.	137	2.0	20	9 A				
19	50.5	.514	72.5	S.S.E.	70	0.0	—					
20	59.0	.657	77.5	S.	187	4.0	28	12 M	3:30 P	11 P	.13	
21	55.0	636	67.5	N.N.E.	191	3.5	26	12 M				
22	55.0	.592	74.0	S.	75	1.0	14	5 P				
23	61.5	572	90.5	S.S.W.	110	0.0	—	—	2:30 A	9 A	.12	
24	64.0	.693	87.0	S.S.W.	74	3.0	24	5 P				
25	66.0	.703	91.5	S.S W.	139	2.5	22	4 P	2 P	12 P	.40	
26	60.5	.670	82.0	N.N.E.	175	4.0	28	2 P	0 A	2 P	1.02	
27	63 0	.778	75.0	S.	169	3 0	24	2 P	10 P	10:30P	T	
28	61.5	.764	72.5	N.E.	119	1.0	14	1 P				
29	58.0	.710	70.0	S.W.	63	1.0	14	4 P				
30	64.5	.802	76.5	S.	74	0.5	10	2 P				
31	69 5	.919	79.5	S.W.	110	0.0	—	—				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The drought, which was so severe during July, continued until the 12th, when a slow rain of nearly an inch did much to revive vegetation. A much heavier rain near the close of the month increased the precipitation record so that the deficiency for the month was only about an inch. While rain is still needed the growing conditions for the Fall crops has been materially improved,

The weather during the month itself was generally normal and showed no unusual features. The barometer records were without interest except for a rather rapid dip during the heavy rain on the 26th. The wind was from the southerly points of the compass about two thirds of the time.

The mean temperature was nearly two degrees warmer than usual and the maximum temperature was about six degrees higher than the normal for this feature. High temperatures were much in evidence and eighty degrees or more was recorded on nearly two-thirds of the days.

The minimum temperature was about the usual value. Several records below fifty degrees were noted.

The mean relative humidity and dew-point were both slightly lower than their normals. The precipitation has already been commented on.

The amount of bright sunshine was very large, the number of cloudy days being few.

J. E. OSTRANDER, Meteorologist.

H. H. SHEPARD, Observer.

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BULLETIN No. 429. SEPTEMBER, 1924

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing	30.35, 27th, 8 A.
Minimum reduced to freezing,	29.17, 30th. 7 P.
Reduced maximum reading,	30.65, 27th, 8 A.
Reduced minimum reading,	29.46, 30th, 7 P.
Mean semi-daily reduced	30 089
Monthly range	1.10

Air Temperature. In Degrees Fahr.

Highest	90.5, 2d, 2 P.,
Lowest	32 5, 25th, 7 A.
Mean hourly	58.7
Mean of means of max. and min.	59.2
Mean sensible (wet bulb)	53 6
Monthly range	58.0
Highest mean daily	75.1, 1st
Lowest mean daily	50.7, 24th
Mean maximum	71.5
Mean minimum	46.8
Mean daily range	24.7
Greatest daily range	40.5, 25th
Least daily range	12.0, 14th

Humidity.

Mean dew point	51.0
Mean force of vapor	.479
Mean relative humidity	80.1

Precipitation. In inches.

Total precipitation, in inches	5.87
Number of days on which .01 inch or more rain fell	7

Wind.

Total movement	3274m
Greatest daily movement	384m, 30th
Least daily movement	35m, 16th
Mean daily movement	109m
Mean hourly velocity	4.5m

Maximum pressure per square foot. 10 lbs= 45m per hour, 30th, 5 P., S.

Maximum velocity for 5 minutes, 30m per hour, 30th, 8 P., S.

Prevailing direction, South, Southwest.

Summary.

South	27 per cent
South Southwest	23 " "
North	10 " "
West Southwest	10 " "
Other directions	30 " "

Weather.

Mean cloudiness observed	47 per cent
Total cloudiness recorded by the Sun Thermometer	185 hours = 50 per cent.
Number of clear days	5
Number of fair days	14
Number of cloudy days	11

Bright Sunshine.

Number hours recorded, 188 = 50 per cent.

Rain, 1st, 2d, 5th, 9th, 10th, 12th, 17th, 22d, 29th, 30th.

Thunder and Lightning, 2d, 5th, 9th.

Frosts, 24th, 25th, 26th.

Gales, 40m., 9th, S., 45m., 30th, S.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	29.90	29.80	29.859	88.5	3 P	64.0	12 P	76.3	75.1	66.7	6 0
2	29 84	29.53	29.754	90.5	2 P	58.0	12 P	74.3	67.7	61.5	7.3
3	30.00	29.84	29 990	73.5	4 P	52.0	12 P	62.7	61.6	53.5	10.0
4	29.97	29.88	29.930	80.0	5:30 P	47.0	3 A	63 5	61.8	57.0	11.7
5	29.88	29.61	29.675	72.0	12 M	47.0	5:30 A	59.5	58.9	55.7	5.0
6	29.92	29.64	29.816	62.0	2:30 P	43 5	3:30 A	52.7	52.9	48.0	7.5
7	30.10	29.92	30.012	70.0	4 P	45.0	5 A	57.5	57.1	50.7	11.4
8	30.16	29.99	30.078	67.0	5:30 P	41.5	5 A	54.3	55.3	51.5	2.0
9	29.99	29.71	29.799	72.0	0:30 P	57.0	12 P	64.5	64.0	62.0	0.1
10	29.90	29.70	29.783	61.0	3:30 P	47.0	12 P	54.0	54.8	48.3	1.6
11	30.20	29.90	30.139	63.0	5 P	41.5	3 A	52.3	52.3	48.0	10.0
12	30.21	30.03	30.116	77.5	3:30 P	42.5	2 A	60.0	60.9	56.3	7.0
13	30.03	29.85	29.920	79.5	1:30 P	58.0	6 A	68.7	69.0	60.3	6 8
14	30.14	29.87	30.031	67.0	1 P	55.0	12 P	61.0	61.5	54.3	3 7
15	30.26	30.14	30.237	68.0	2:30 P	50 0	12 P	59 0	58.9	55.0	7 0
16	30.26	30.12	30.210	71.5	3:30 P	43.0	6 A	57.3	56.4	50.0	8.8
17	30.12	29.79	29.937	64.5	1 P	49.0	6 A	56 7	55.6	52.5	1.6
18	30.13	29.78	29.939	74.5	3 P	48.5	6:30 A	61.5	60.3	54.5	9.9
19	30.47	30.13	30.357	74.0	3:30 P	46.0	6 A	60.0	58.0	55.0	9.0
20	30.50	30.40	30.449	69.0	3:30 P	37.0	6 A	53.0	52.8	46.0	6.5
21	30 40	30.27	30.343	71.5	4 P	42.0	7 A	56.7	56.2	52.5	8.5
22	30.27	30.02	30.122	66.0	4 P	49.0	1 A	57.5	58.1	59.0	0.0
23	30.17	30.01	30.090	62.0	3:30 P	48.0	9 P	55.0	55.6	48.0	4.1
24	30.34	30.17	30.320	67.0	5 P	36.0	6 A	51.5	50.7	44.0	10.8
25	30.44	30.34	30.418	73.0	4:30 P	32.5	7 A	52 7	52.3	44.0	10.3
26	30.61	30.44	30.586	72.0	5:30 P	35.0	7 A	53.5	52.3	45.5	10.5
27	30 65	30.53	30.599	72.5	5:30 P	38.0	6:30 A	55.3	51.6	46.7	6.2
28	30.53	30.30	30.462	74.5	3:30 P	42.5	3 A	58.0	55.8	53.0	4.2
29	30.30	29.91	30.077	72.0	3 P	56.0	1 A	64.0	65.5	62.0	0.2
30	29.91	29.46	29.625	70.5	8 P	53.0	12 P	61.7	66.7	68.0	0.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	65.0	.730	84.5	N.E.	113	1.0	14	2 P	8:30A	9:30 A	T	
2	60.0	.600	87.5	E.	129	5.0	32	2 P	3 P	10 P	.90	
3	49.0	.499	69.5	N.	182	4.0	28	3 P				
4	53.0	.552	73.5	N.	107	0.5	10	9 A				
5	54.5	.477	90.0	S.S.W.	72	4.0	28	3 P	3 P	9:30 P	1.05	
6	44.5	.378	89.5	W.S.W.	138	3.5	26	1 P				
7	46.5	.448	71.5	W.S.W.	136	3.0	24	10 A				
8	50.0	.446	82.5	S.	49	4.0	28	10 P				
9	60.0	.622	83.5	S.S.W.	260	8.0	40	11 A	12 M	12 P	1.90	
10	45.5	.386	79.0	N.	113	1.5	17	3 P	0 A	9:30A	.26	
11	44.0	.384	75.0	W.S.W.	101	0.5	10	3 P				
12	53.5	.523	81.5	S.	151	4.5	30	6 P	8 A	8:30 A	T	
13	57.5	.620	77.0	S.S.W.	161	2.0	20	3 A				
14	49.5	.517	69.0	W.	118	1.5	17	9 A				
15	52.0	.497	78.0	N.W.	42	0.0	—	—				
16	46.5	.420	75.5	S.	35	0.0	—	—				
17	51.0	.421	88.0	E.S.E.	70	0.0	—	—	5:80 P	11 P	.05	
18	50.5	.502	72.5	N.N.W.	83	1.5	17	12 M				
19	52.5	.496	80.5	E.N.E.	54	0.0	—	—				
20	44.0	.346	83.5	S.	56	0.0	—	—				
21	51.5	.425	92.0	S.S.W.	52	0.0	—	—				
22	59.0	.520	97.0	S.	84	4.0	28	9 P	6:30 A	12 P	.61	
23	44.0	.399	72.0	N.N.W.	164	3.0	24	3 P				
24	40.5	.326	75.5	N.N.E.	89	1.5	17	10 A				
25	39.5	.330	73.0	S.S W.	56	0.0	—	—				
26	43 0	.338	83.0	S.	36	0.0	—	12 M				
27	45.5	.346	89.0	S.S.W.	40	0.0	—	—				
28	52.0	.441	81.0	S.S.W.	52	0.0	—	—				
29	60.0	.681	82.5	S.	147	5.5	33	11 P			T	
30	67.5	.722	92.0	S.	384	10.0	45	5 P	0 A	12 P	1.10	

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The most pronounced feature of the weather for the month was the heavy precipitation, after the shortage which had been accumulating since April. Four heavy rains occurred which effectually broke all traces of the drought. While the first frost was more than a week later than usual the month was considerably cooler than normal and much cloudiness was in evidence.

The mean barometer was higher than the normal and the range of pressure rather large. Two very pronounced lows were registered; one on the 2d and the other on the 30th. Both were accompanied by heavy rainstorms. While the wind movement was practically normal the direction was mostly from the South during the last part of the month.

The mean temperature was more than two degrees lower than the normal, and the range nearly four degrees more than usual. The maximum temperature was more than three degrees higher than usual but occurred very early in the month,

The mean dew point was about three degrees below the normal, largely due to the low temperature record. The relative humidity was high owing to the large amount of cloudy days.

The total precipitation was nearly fifty per cent more than the normal and nearly all of it occurred during well defined storms. All the thunder storms were early in the month.

The amount of sunshine was a little less than usual.

J. E. OSTRANDER, Meteorologist.

JAMES BOWER Jr. Observer.

Agricultural College
AMHERST, MASS.

BULLETIN No. 430. OCTOBER, 1924

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing	30.29, 30th, 8 A.
Minimum reduced to freezing,	29.40, 1st. 0 A.
Reduced maximum reading,	30.60, 30th, 8 A.
Reduced minimum reading,	29.70, 1st, 0 A.
Mean semi-daily reduced	30.212
Monthly range	0 90

Air Temperature. In Degrees Fahr.

Highest	78.5, 6th, 1:30 P.,
Lowest	19 5, 31st, 7:30 A.
Mean hourly	49.8
Mean of means of max. and min.	51.3
Mean sensible (wet bulb)	42.1
Monthly range	59.0
Highest mean daily	63.4, 6th
Lowest mean daily	40.4, 22nd
Mean maximum	66.4
Mean minimum	36.3
Mean daily range	30.1
Greatest daily range	43.5, 23d, 24th
Least daily range	14.0, 8th

Humidity.

Mean dew point	37.6
Mean force of vapor	.330
Mean relative humidity	72.9

Precipitation. In inches.

Total precipitation, in inches	.01
Number of days on which .01 inch or more rain fell	1

Wind.

Total movement	3643m
Greatest daily movement	255m, 16th
Least daily movement	36m, 27th
Mean daily movement	118m
Mean hourly velocity	4.8m

Maximum pressure per square foot, 7.5 lbs= 39m per hour, 20th, 2 P., N.W.

Maximum velocity for 5 minutes, 21m per hour, 20th, 1 P., N.W.

Prevailing direction, West.

Summary.

North Northeast	22 per cent
South Southwest	13 " "
South	10 " "
Southwest	10 " "
Northwest	10 " "
Other directions	35 " "

Weather.

Mean cloudiness observed	18 per cent
Total cloudiness recorded by the Sun Thermometer	116 hours = 34 per cent.
Number of clear days	11
Number of fair days	17
Number of cloudy days	3

Bright Sunshine.

Number hours recorded, 225 = 66 per cent.

Rain, 7th, 18th.

Frosts. 13th, 14th, 15th, 16th, 18th, 20th, 23d, 24th, 27th, 30th, 31st.

Gales, 36m., 12th, N.N.E.; 36m., 17th, N.W.; 36m., 19th, N.; 39m., 20th, N.W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	29.99	29.70	29.971	63.0	4 P	46.0	12 P	54.5	51.9	44.0	5.6
2	30.22	29.99	30.163	75.0	4 P	42.0	4:30 A	58.5	55.4	46.5	8.6
3	30.37	30.22	30.357	77.5	4:30 P	37 0	7 A	57.3	55.4	47.5	9.8
4	30.50	30 37	30.436	72.5	3 P	38 0	7 A	55.3	54.3	47.0	8.5
5	30.37	30.26	30.324	75.0	3:30 P	45.0	3 A	60.0	57.3	53.0	6.2
6	30.26	30.05	30.194	78.5	1:30 P	55.0	5 A	66 7	63.4	55.5	6.5
7	30.24	30.16	30.204	66.5	12 M	44.0	6:30 A	55.3	54.8	50.5	3.5
8	30.33	30.15	30.291	57.0	11 A	43.0	12 P	50 0	50.0	44.0	1.8
9	30.34	30.26	30.311	65.0	3:30 P	37.5	6 A	51.3	51.2	45.5	8.7
10	30.29	30.23	30.268	71.0	3 P	47.0	2:30 A	59.0	56.5	48.0	6.3
11	30.27	30.11	30.169	78.0	2:30 P	44.0	6:30 A	61.0	60.0	52.5	9.3
12	30.15	30 00	30.088	66.5	1:30 P	43.0	4 A	54.7	52.7	46.3	5.6
13	30.25	30.15	30.245	58 0	2 P	30.0	5 A	44.0	43.7	38.0	10 0
14	30.38	30.23	30.316	66.0	4 P	28.0	7 A	45.0	43.1	38.7	8.9
15	30.31	30.18	30.266	69.5	3:30 P	31.5	7 A	50.5	48 6	40.0	7 6
16	30.22	30.02	30.122	66.0	3:30 P	34.0	7 A	50.0	48.8	44.0	5.8
17	30.24	30.03	30.190	62.0	1:30 P	38.0	7:30 A	50.0	48 0	38 0	5.7
18	30 24	29.90	30 092	58.0	3:30 P	25.0	7:30 A	41.5	44 3	37.0	4.6
19	30.01	29.87	29.960	63.5	2:30 P	44 5	7:30 A	54.0	51.8	42.3	9.3
20	29.90	29.77	29.853	55.0	1:30 P	31 0	7 A	43 0	41.7	33.0	8 0
21	30 09	29.88	29.969	50.5	3 P	32 0	2:30 A	41 3	41.2	36.0	2.3
22	30.26	30.09	30.212	54.0	1:30 P	36.0	7:30 A	45.0	40.4	33.0	6.4
23	30.30	30.21	30.278	64.0	3 P	20.5	7 A	41.7	41.1	33.5	8.2
24	30.37	30.27	30 355	71.5	4 P	28.0	7 A	49.7	47.5	37.0	9.2
25	30.41	30.23	30.322	74 0	3:30 P	32 0	7:30 A	53 0	49.9	40.5	8.3
26	30.24	30.14	30 206	72.0	3 P	40.5	0 A	56.2	54.1	45.0	9.1
27	30.23	30.01	30.130	75.5	3:30 P	32.5	7 A	54.0	51.2	41.0	8.7
28	30.02	29.94	29.989	74.5	3 P	34.0	7 A	54.2	52.3	43 5	6.7
29	30.31	29.98	30.219	69.0	3:30 P	40.0	12 P	54.5	51.9	41.5	8.5
30	30 60	30.31	30.560	57.0	2:30 P	29.0	6:30 A	43.0	41.9	32.5	9.4
31	30.60	30.32	30.477	56.0	3 P	19.5	7:30 A	37.7	41.3	31.0	9.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	38.5	.345	66 5	W.	253	3.5	26	12 M				
2	43.0	.371	77 0	S.	92	0.0	—					
3	62.5	.370	81.0	S.	39	0.0	—					
4	45.0	.364	84.5	S.S.W.	64	0.0	—					
5	51.5	.454	88.5	S.	79	0.0	—					
6	53.0	.494	83.0	W.S.W.	107	1.0	14	4 P				
7	47.5	.405	81.5	N.W.	77	0.0	—		4 P	8 P	.01	
8	40.0	.329	75.5	N.N.E.	157	3.5	26	1 P				
9	41.5	.352	73.5	N.N.E.	242	4.5	30	3 P				
10	43.0	.405	69 0	N.N.E.	238	3.5	26	9 A				
11	49.0	.465	74.5	N.N.E.	107	1.0	14	1 P				
12	31.5	.383	66.0	N.N.E.	168	6.5	36	2 P				
13	31.0	.268	61.5	N.N.E.	150	4.0	28	9 P				
14	35.5	.255	82.5	N.	46	0.0	—					
15	35 0	.298	70.5	N.N.E.	53	0.0	—					
16	41.0	.326	82.5	S.S.E.	48	0.0	—					
17	31.0	.272	62.0	N.N.W.	255	6.5	36	9 A				
18	30.0	.284	63.5	S.S.W.	66	1.0	14	2 P	2:30 P		T	
19	33.0	.348	54.0	N.W.	140	6.5	36	4 A				
20	26.5	.222	65.0	W.N.W.	41	7.5	39	2 P				
21	29.5	.250	63.5	N.W.	175	4.5	30	1 P				
22	27.0	.218	69.0	N.	156	2.5	22	4 P				
23	28.0	.223	69.5	S.W.	150	0.0	—					
24	31.0	.266	67.5	W.N.W.	192	0.0	—					
25	38.0	.283	82.0	S.W.	54	0.0	—					
26	36 0	.400	54.0	S.W.	124	4.5	30	12 M				
27	36.0	.318	70.5	S.S.W.	36	0.0	—					
28	37.5	.328	72.5	N.N.E.	43	0.0	—					
29	37.5	.296	74 5	E.N.E.	106	0.0	—					
30	24.5	.438	60.5	S.E.	67	0.0	—					
31	26.0	.211	72.5	S.S.W.	118	3.5	26	2 P				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was exceptionally pleasant at one of the most agreeable periods of the year. For the first time since 1836, when the weather records were started in Amherst, a full calendar month has passed with practically no precipitation. A few monthly records at times have fallen below one-half inch but this is the first month that has been virtually rainless. The amount of sunshine was naturally very large and only three days were cloudy. There were numerous frosty mornings and after the middle of the month, thin ice was formed a few times in very shallow water.

The mean barometer was extremely high and the range of of pressure considerably less than usual. Fluctuations in pressure were generally rather slow. The wind direction was more varied than usual and the total movement rather small. Only a few gales were registered and those were of little intensity.

The mean temperature was practically normal and the maximum and minimum records were near the average values.

The mean dewpoint was nearly four degrees lower than the normal and the relative humidity was correspondingly low.

The percentage of observed cloudness was much less than the value given by the sunshine recorder, owing to especially clear evenings.

J. E. OSTRANDER, Meteorologist.

JAMES BOWER Jr. Observer.

BULLETIN No. 431. NOVEMBER, 1924

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing	30.27, 9th, 9 A.
Minimum reduced to freezing,	28.90, .23rd 5 A.
Reduced maximum reading,	30.58, 9th, 9 A.
Reduced minimum reading,	29.22, 23d, 5 A.
Mean semi-daily reduced	.30 060
Monthly range	1.38

Air Temperature. In Degrees Fahr.

Highest	75.0, 1st 2:30 P., 7th. 3 P.
Lowest	4 5, 19th, 7:30 A.
Mean hourly	40.5
Mean of means of max. and min.	40.5
Mean sensible (wet bulb)	33 8
Monthly range	70.5
Highest mean daily	59.7, 7th
Lowest mean daily	19.2, 17th
Mean maximum	51.5
Mean minimum	29.5
Mean daily range	22.0
Greatest daily range	36.5, 11th,;19th
Least daily range	6.5, 24th

Humidity.

Mean dew point	28.1
Mean force of vapor	.238
Mean relative humidity	70.9

Precipitation. In inches.

Total precipitation, in inches	2.57
Total snow, in inches	9.0
Number of days on which .01 inch or more rain fell	5
Days of sleighing	2

Wind.

Total movement	4779m
Greatest daily movement	494m, 17th
Least daily movement	30m,10th
Mean daily movement	159m
Mean hourly velocity	6.6m
Maximum pressure per square foot, 15.0 lbs= 55m per hour, 17th, 1 A., N.N.W.	
Maximum velocity for 5 minutes, 30m per hour, 17th, 1 A., N.N.W.	
Prevailing direction, West Southwest.	

Summary.

South Southwest	27 per cent
North Northwest	13 " "
South	10 " "
Other directions	50 " "

Weather.

Mean cloudiness observed	44 per cent
Total cloudiness recorded by the Sun Thermometer	163 hours = 55 per cent.
Number of clear days	6
Number of fair days	11
Number of cloudy days	13

Bright Sunshine.

Number hours recorded, 135 = 45 per cent.

Rain, 12th, 14th. 15th, 22d, 23d, 24th, 30th.

Snow, 9th, 15th, 17th, 24th, 29th.

Frosts before the 16th, 5th, 10th, 11th, 13th, 15th.

Gales, 39m., 2d, N.N.W.; 44m.. 3d, N.N.W.; 37m., 8th, N.; 36m, 14th, W.N.W.; 45m., 16th, N.W.; 55m., 17th, N.N.W.; 40m., 22d, S.E.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.36	30.17	30.275	75.0	2:30 P	41.0	7:30 A	58.0	54.7	43.0	8.3
2	30.17	29.86	30.037	67.0	0:30 P	44.0	12 P	55.5	52.3	42.2	3.3
3	30.30	30.10	30.236	49.0	3 P	32 0	12 P	40.5	39.4	30.5	6.5
4	30 07	29.81	29.919	59.0	2:30 P	32 0	0 A	45.5	45.0	36.0	4.2
5	30.31	30 07	30.286	61.0	2:30 P	28.0	3:30 A	44.5	45.3	36.5	8.0
6	30.25	30.04	30.115	65.0	2 P	43.0	3:30 A	54.0	55.5	50.0	5.3
7	30.12	29.91	30.035	75.0	3 P	47.5	7:30 A	61.2	59.7	50.0	6.1
8	30.54	29.87	30.312	50.0	2:30 P	36.0	12 P	43.0	47.8	36 5	5.2
9	30.58	30.39	30.498	43 5	12 M	26.0	7 A	34 7	36.3	30.0	2.1
10	30.44	30.41	30.422	58 0	4 P	26.5	7 A	42 2	40.9	30.5	6.8
11	30.44	30.24	30.347	55.5	3:30 P	19.0	7:30 A	37.3	39.6	34.0	4.8
12	30.25	30.15	30.198	60.0	3 P	45 5	7:30 A	52.7	52.8	49.8	0 0
13	30.39	30.02	30.285	61.0	2 P	35.0	7:30 A	48.0	48.4	39 0	6 5
14	30.10	29.81	29.978	55 0	12 M	32.0	12 P	43.5	44.5	36.5	3 1
15	30.09	29.92	30.048	43.0	3 P	24.0	4:30 A	33.5	34.6	29.5	0.0
16	29.92	29.54	29.712	51.0	1:30 P	29.0	12 P	40.0	39 0	35.0	0.6
17	30.04	29.70	29.977	30.0	2:30 P	9.0	6 A	19.5	19 2	12.0	8.1
18	30 23	30.04	30.154	32.5	3:30 P	12 0	7:30 A	22.3	21.2	14 5	8.1
19	30.29	30.23	30.280	41.0	4 P	4 5	7:30 A	22.7	22.4	15.0	8.4
20	29.23	30 00	30.114	41 0	3:30 P	22.0	5 A	31.5	32.8	27.0	5.0
21	30 00	29.78	29.916	60.0	2:30 P	24.0	8 A	42.0	41.3	33.5	4.7
22	29.78	29.21	29.441	65.0	12 M	47.5	7 A	56.3	57 4	55.0	0.0
23	29.65	29.20	29.410	58.0	0 A	40.5	8 A	49.3	44.4	37.3	0.0
24	29.88	29.67	29.782	40.5	0 A	34.0	12 P	37 3	36.6	33.7	0.0
25	30.11	29.88	30.030	44.5	2 P	28.0	6 A	36.3	34 9	28 5	4.5
26	30.35	30.11	30.337	45.0	3 P	27.5	7:30 A	36.3	35.5	28.5	7.9
27	30.30	30 08	30 141	46.0	3 P	27.0	5 A	36.5	38.5	35.0	3 2
28	30.07	30 00	30.040	48.0	3 P	26.5	6 A	37.3	37.8	33.3	9.0
29	30.04	29.51	29 736	36.0	9 P	24.5	5 A	30.3	31.1	29.0	0.0
30	29 80	29.52	29 748	31.0	3 P	18.0	12 P	24.5	26.0	21.5	5.5

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	38.5	.351	68 5	S.S.W.	125	0.5	10	1 P				
2	36.0	.348	63.5	S.S.W.	255	7.5	39	3 P				
3	23.5	.198	58.0	N.N.W.	261	9.5	44	2 P				
4	28.5	.264	61.5	N.W.	136	8.5	41	4 P				
5	32.0	.253	73.0	S.S.W.	123	3.5	26	7 P				
6	48.0	.396	84.5	S.S.W.	187	2.0	20	2 P				
7	46.5	.402	87.0	S.S.W.	184	5.0	32	7 P				
8	29.0	.269	61.5	N.	331	7.0	37	6 A				
9	23.5	.186	66.0	E.N.E.	142	4.0	28	1 A	4 P	5 P	T	T
10	25.0	.194	71 0	S.W.	30	0.0	—					
11	29.5	.242	74.5	S.S.W.	34	0.0	—					
12	49.0	.366	95.0	S.S.E.	35	0.5	10	11 P	6 A	3 P	T	
13	34.5	.267	73.0	N.N.E.	85	0.5	10	11 A				
14	32.0	.255	71.5	W.N.W.	247	6 5	36	11 A	3 A	8 A	.01	
15	26.0	.186	76.0	W.	81	0.5	10	1 P	8 A	7 P	T	T
16	29.0	.232	68.5	W.S.W.	135	10.0	45	12 P				
17	0.0	.090	51.5	N.N.W.	494	15.0	55	1 A	0 A	3 A	T	T
18	−1.0	.104	41.0	N.	200	2.5	22	1 P				
19	5.0	.106	56.5	W.	57	0.0	—					
20	18.5	.173	59.5	S.	92	0.0	—					
21	29.0	.236	75 5	S.S.W.	90	2.5	22	6 P				
22	53.5	.475	86.0	S.	313	8.0	40	8 P	4 A	12 P	1.19	
23	31.0	.252	72.5	W.N.W.	264	5 0	32	8 P	0 A	8 P	.34	
24	31.5	.202	88.0	S.S.E.	158	1.5	17	1 A	7:30 A	2 P	.20	T
25	22.0	185	65.5	W S.W.	120	1.0	14	2 P				
26	21.5	.181	64.5	S.W.	150	0.0	—					
27	31.0	.227	78.0	S.	207	4.5	30	12 M				
28	29.0	.210	77.0	S.S.W.	151	3 0	24	2 P				
29	26.0	.168	84 0	N.N.W.	45	2.5	22	10 P	9 A	12 P	.83	9
30	16 5	.125	74.5	N.N.W.	47	2.0	20	1 A	0 A	1 A	T	

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The rainless period which began on the first of October continued, except for inappreciable amounts, until the twenty-second of this month—a period of 52 days. This is by far the longest time without precipitation at this place since the beginning of records taken here in 1836. The total deficiency in precipitation from the first of April up to the first of December was more than eight inches—about twenty-five per cent.

The month was rather cloudy and warmer than usual although the changes in temperature were abnormally large.

The records of the several weather elements show the following features of interest: The mean barometer was slightly higher than the normal and the range of pressure rather large. The last half of the month was marked by two waves of pressure of considerable magnitude and duration. The wind was from the southwest quadrant about one-half of the time and the remainder was quite variable. The total wind movement was slightly more than the normal and the number of gales rather large.

The maximum temperature was more than ten degrees higher than usual and the minimum eight degrees lower than usual, giving an extremely large range for the month. The month was about two degrees warmer than the normal.

The total precipitation was about eight-tenths of the normal and practically all of it occurred in two rather heavy storms. The first a rainstorm on the 22d-24th, and the last, a snowstorm on the 29th.

The mean dewpoint and relative humidity were both considerably lower than usual.

J. E. OSTRANDER, Meteorologist.

JAMES BOWER Jr. Observer.

BULLETIN No. 432. DECEMBER, 1924

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.27, 26th, 10 A.
Minimum reduced to freezing,	28.88, 13th 7 P.
Reduced maximum reading,	30.59, 26th, 10 A.
Reduced minimum reading,	29.19, 13th, 7 P.
Mean semi-daily reduced	.30.134
Monthly range	1.40

Air Temperature. In Degrees Fahr.

Highest	58.0, 9th, 10:30 A.
Lowest	-1.0, 21th 7 A.; 22d, 6 A.
Mean hourly	25.7
Mean of means of max. and min.	25.6
Mean sensible (wet bulb)	21.8
Monthly range	59.0
Highest mean daily	45.8, 9th
Lowest mean daily	6.0, 21st
Mean maximum	33.9
Mean minimum	17.3
Mean daily range	16.6
Greatest daily range	29.0, 5th
Least daily range	4.0, 18th

Humidity.

Mean dew point	16.3
Mean force of vapor	.139
Mean relative humidity	74.6

Precipitation. In inches.

Total precipitation, in inches	2.16
Total snow, in inches	3.0
Number of days on which .01 inch or more rain fell	12
Days of sleighing	6

Wind.

Total movement	4597m
Greatest daily movement	418m, 14th
Least daily movement	22m, 12th
Mean daily movement	148m
Mean hourly velocity	6.2m

Maximum pressure per square foot, 11.0 lbs = 47m per hour, 20th, 12 P., N.W.

Maximum velocity for 5 minutes, 30m per hour, 19th, 10 P., N.W.

Prevailing direction, West.

Summary.

Northwest	19 per cent
North Northeast	10 " "
West Northwest	10 " "
West	13 " "
South Southwest	16 " "
South	10 " "
Other directions	22 " "

Weather.

Mean cloudiness observed	57 per cent
Total cloudiness recorded by the Sun Thermometer	163 hours = 58 per cent.
Number of clear days	4
Number of fair days	13
Number of cloudy days	14

Bright Sunshine.

Number hours recorded, 120 = 42 per cent.

Rain. 5th, 6th, 8th, 9th, 13th, 17th, 18th, 19th, 24th.

Snow. 5th, 12th, 13th, 14th, 22d, 23d, 24th.

Gales. 44m, 9th, W.N.W.; 35m, 10th, N.W.; 35m, 13th, S.W.; 45m, 14th, W.N.W.; 42m, 15th, N.W.; 45m, 19th, N.W.; 47m, 20th, N.W.; 41m, 21st, N.W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.09	29.80	29 977	35.0	1:30 A	7.0	7:30 A	21.0	19.8	12.5	6.1
2	30.26	30.09	30.246	37.0	3:30 P	7.0	2 A	22.0	27.2	22.5	7.6
3	30.23	30.05	30.121	37.0	12 P	24.0	7 A	30.5	31.3	28.5	0.0
4	30.43	30 08	30.282	37.5	3 P	30 0	7 A	33.7	30.6	22.7	7.8
5	30.46	29.92	30.314	30.0	2 P	1.0	6 A	15.5	17.2	12.5	1.6
6	30.08	29.73	29.913	45.0	1 P	30.0	0 A	37.5	37.8	34.5	1.2
7	30.12	30.07	30 113	45 0	3 P	37.0	3 A	41.0	39 2	36.3	0.3
8	30.12	29.62	29.928	39.0	0:30 P	32.0	7:30 A	35 5	36.6	35.3	0 0
9	29.92	29.62	29.722	58.0	10:30 A	35.0	0 A	46.5	45 8	42.0	6.8
10	30.27	29.92	30.176	39.0	0 A	31 0	8 A	35.0	32.9	26.0	6 0
11	30.29	30.14	30.222	34.0	3 P	12 0	6 A	23 0	23.4	21.7	6.6
12	30.14	29.74	29.930	27.0	12 M	13.5	2:30 A	20.3	21.4	19.5	1.4
13	29.74	29.19	29.271	39 0	7 P	24.5	0 A	31.7	32.2	32.7	0.3
14	29.71	29.33	29.512	33.0	0 A	18.0	11 P	25.5	24.0	19 3	6.7
15	30.22	29.71	30 077	26.0	2:30 P	13.0	6:30 A	19.5	20.5	18.5	7.1
16	30.40	30.13	30.329	29.0	12 P	11.5	7:30 A	20.3	20.3	17.7	0.2
17	30.19	29.90	30.068	44.5	6:30 P	25 0	5:30 A	34.7	34.7	33 0	0.4
18	30.35	30.19	30.332	32.0	4:30 P	28.0	8 A	30.0	31.5	26.0	0.0
19	30 23	29.88	29.999	37.0	11 P	32 0	0 A	34.5	32.9	32.3	0.0
20	30.38	30.00	30.239	34 0	0 A	17.0	12 P	25.5	24.8	19.5	7.0
21	30.55	30 38	30.552	17.0	0 A	−1.0	7 A	8.0	6 0	0.5	8 3
22	30.51	30.33	30.422	20.0	3 P	−1.0	6 A	9.5	10 3	7.0	0.8
23	30 38	30.21	30.306	26.0	12 P	5.0	7 A	15.5	17 4	13.3	3.5
24	30.21	29.70	29.842	35.0	3:30 P	26.0	0 A	30.5	31.7	30.5	0.0
25	30.35	29.80	30.058	33.0	0 A	16.0	12 P	24.5	24.2	19.3	4.8
26	30.59	30.35	30.518	27.0	3 P	8.5	7:30 A	17 7	17.2	10.5	8.2
27	30.37	30.06	30.202	36.0	2:30 P	14.5	4 A	25.3	23.8	18.7	5.6
28	30.50	30.28	30.479	18.5	3:30 P	5.0	8:30 A	11.7	11 2	6.7	7.7
29	30.54	30.22	30.439	23.0	4 P	4 0	7 A	13.5	15.4	12.0	4 4
30	30.22	30.08	30.155	41.0	2:30 P	20.5	7:30 A	30.7	29.7	24.7	4.6
31	30.54	30.13	30.399	35.0	1:30 P	11.0	12 P	23.0	25.7	20.5	5.1

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Total in Inches. Snow.
1	7.5	.085	75.5	N.N.W.	92	4.0	28	1 P				
2	15.0	.136	64 0	N.N.W.	172	2.5	22	10 A				
3	25.0	.172	80.0	W.	128	2.0	20	10 P				
4	14.5	.145	62.0	N.W.	251	5.0	32	1 P				
5	14.0	.085	76.5	N.N.E.	40	0.0	—		5:30 P	12 P	.35	1
6	32.5	.216	89 0	S.	87	3.0	24	12 M	0 A	5 A	.06	
7	34.5	.223	89.5	S.	78	0.0	—					
8	35.0	.208	97 5	N.W.	36	0.5	10	9 P	1:30 P	12 P	.80	
9	37.0	.310	72.5	W.	291	9.5	44	9 P	0 A	1 A	.02	
10	18.5	.162	63 0	N.W.	357	6.0	35	0 A				
11	14 5	.113	76.0	N.	74	0.0	—					
12	16.5	.115	83.0	S.S.W.	22	0.0	—		9 A	12 P	.02	¼
13	31.0	.198	91 0	W.S.W.	64	6 0	35	6 P	0 A	10 A	.17	1
14	15.0	.114	79.5	W.N.W.	418	10.0	45	5 P	11 A	8 P	.03	¼
15	16.0	.108	85.0	W.N.W.	351	9.0	42	3 P				
16	15.5	.106	88.5	N.N.E.	50	0.0	—					
17	29.0	.208	79.5	W.	60	1.5	17	7 P	7 P	10 A	.03	
18	18.5	.164	63.0	S.S.E.	86	0.0	—		7 P	12 P	.02	T
19	31.5	.184	97.5	N.	30	10.0	45	10 P	0 A	8 P	.11	
20	7.5	.127	55.5	N.W.	333	11.0	47	12 P				
21	−4 5	.048	76.0	N.W.	291	8.5	41	1 A				
22	−6.5	.078	47 5	S.S.W.	101	1.0	14	2 P	9:30 A	12 M	T	T
23	2.5	.095	58.0	S.	97	0.0	—		9:30 P	12 P	.07	¼
24	28.0	.176	89.5	S.S.W.	109	1.0	14	3 A	0 A	3 P	.48	¼
25	13.0	.118	70.0	N.W.	164	5.0	32	12 M				
26	−9.5	.088	35.0	S.W.	154	2.0	20	3 P				
27	9.0	.121	56.5	W.	216	3.0	24	11 P				
28	0.0	.064	71.5	W.N.W.	163	0.5	10	1 P				
29	6.5	.087	76.0	S.S.W.	86	0.5	10	8 P				
30	20.0	.150	75.5	S.S.W.	96	0.0	—					
31	19.0	.116	90.5	N·N.E.	100	4.0	28	6 P				

**Rain or melted snow at base of tower. * Included in following day.

Annual Summary for 1924.

Pressure. In inches.

Maximum reduced to freezing, ... 30.44, Jan. 2nd, 9 A.
Minimum reduced to freezing, ... 28.88, Dec. 13th, 7 P.
Maximum reduced to freezing and sea-level, ... 30.77, Jan. 2nd, 9 A.
Minimum reduced to freezing and sea-level, ... 29.19, Dec. 13th, 7 P.
Mean semi-daily reduced to freezing and sea-level, ... 30.010
Annual range, ... 1.58

***Air Temperature.** In degrees Fahr.

Highest, ... 97.0, Aug. 7th, 1:00 P.
Lowest, ... -8.0, Jan. 27th, 6:00 A.
Jan. 28th, 6:00 A.
Mean hourly, ... 46.6
Mean of means of max. and min., ... 46.7
Mean sensible (wet bulb), ... 41.0
Annual range, ... 105.0
Highest mean daily, ... 78.8, Aug. 7th.
Lowest mean daily, ... -0.3, Jan. 27th.
Mean maximum, ... 57.8
Mean minimum, ... 35.7
Mean daily range, ... 22.1
Greatest daily range, . . . 43.5, Oct. 23rd., 24th.
Least daily range, ... 3.0, Feb. 5th.

Humidity.

Mean dew point, ... 36.4
Mean force of vapor, ...362
Mean relative humidity, ... 73.9

Wind.

Prevailing direction, ... West

Summary.

North . . . . . 10 per cent
North Northeast . . . . . 9 " "
South . . . . . 9 " "
South Southwest . . . . . 19 " "
Northwest . . . . . 9 " "
Other directions, ... 41 " "
Total movement, ... 53,855 m
Greatest daily movement, ... 553m., Mar. 12th
Least daily movement, ... 22 m., Dec. 12th
Mean daily movement, ... 147 m
Mean hourly velocity, ... 6.1 m
Maximum pressure per square foot, 23.5 lbs., = 69 m. per hour, Apr. 14th. 3 P., N. W.
Maximum velocity for 5 minutes, 42 m. per hour, July 13th, 1 P., S.W.

Precipitation. In inches.

Total precipitation, rain or melted snow, . 30.96
Snow total in inches, ... 45.0
Number of days on which .01 or more rain or melted snow fell, ... 96

Weather.

Mean cloudiness observed, ... 41 per cent.
Total cloudiness recorded by Sun Thermometer, ... 1637 hrs.=37 per cent.
Number of clear days, ... 141
Number of fair days, ... 145
Number of cloudy days, ... 80

Bright Sunshine.

Number of hours recorded, 2838 hrs.=63 per cent

Dates of Frosts.

Last, ... May 2d
First, ... Sept. 24th

Dates of Snow.

Last, ... April 8th
First, ... Nov. 9th
Total days of sleighing, ... 54

Gales of 50 or More Miles Per Hour.

Jan. 1st, 58m, N.W.; 11th, 67m, S.S.E.; 21st, 63m, N.W.; 26th, 56m, N.W.
Mar. 11th, 57m. N.E.; 12th, 63m, N.N.E.; 28th, 59m, W.N.W.
Apr. 14th, 69m, N.W.; 51m, 24th, N.N.W.
May 18th, 52m, S.
July 13th, 56m, S.W.
Nov. 17th, 55m, N.N.W.

Temperature in ground shelter.

JAMES BOWER Jr.
Observer.

J. E. OSTRANDER,
Meteorologist.

BULLETIN No. 433. JANUARY, 1925

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.43, 1st, 8 A.
Minimum reduced to freezing,	28.88, 30th 4 A.
Reduced maximum reading,	30.76, 1st, 8 A.
Reduced minimum reading,	29.19, 30th, 8 A.
Mean semi-daily reduced	.30.204
Monthly range	1.57

Air Temperature. In Degrees Fahr.

Highest	41.5, 8th, 11 A.
Lowest	-13.0, 29th 4 A.
Mean hourly	20.9
Mean of means of max. and min.	21.1
Mean sensible (wet bulb)	17.7
Monthly range	54.5
Highest mean daily	37.0, 8th
Lowest mean daily	0.1, 24th
Mean maximum	30.5
Mean minimum	11.8
Mean daily range	18.7
Greatest daily range	38.0, 29th
Least daily range	8.0, 6th, 30th

Humidity.

Mean dew point	13.8
Mean force of vapor	.144
Mean relative humidity	81.5

Precipitation. In inches.

Total precipitation, in inches	3.42
Total snow, in inches	22.0
Number of days on which .01 inch or more rain fell	8
Days of sleighing	20

Wind.

Total movement	5688m
Greatest daily movement	406m, 23d
Least daily movement	24m, 16th
Mean daily movement	183m
Mean hourly velocity	7.6m

Maximum pressure per square foot, 14.0 lbs = 52m per hour, 22d, 8 P., N.N.W.

Maximum velocity for 5 minutes, 27m per hour, 22d, 10 P., N.N.W.

Prevailing direction, N.N.W.

Summary.

North Northeast	23 per cent
North	19 " "
North Northwest	16 " "
Northwest	10 " "
West Northwest	10 " "
Other directions	22 " "

Weather.

Mean cloudiness observed	51 per cent
Total cloudiness recorded by the Sun Thermometer	173 hours = 58 per cent.
Number of clear days	6
Number of fair days	9
Number of cloudy days	16

Bright Sunshine.

Number hours recorded, 124 = 42 per cent.

Rain, 3d, 13th. 16th, 27th,

Snow, 2d, 3d, 4th, 6th, 12th, 13th, 16th, 18th, 20th, 27th, 29th, 30th.

Gales, 47m, 13th, 10 P., N.W.; 40m, 14th. 9 P. N.: 52m, 22d. 8 P., N.N.W.: 39m. 23d, 2-30 A.. N.N.W.; 39m., 27th, 5 P., N.N.E.; 47m, 28th. 4 A., N.N.E.; 46m, 30th, 12 M., N.W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.76	30.51	30.757	20.0	3:30 P	1.0	8 A	10.5	10.4	5.3	7.1
2	30.72	30.34	30.578	20.0	12 P	10.0	7 A	15.0	15.7	14.0	0.0
3	30.34	29.86	30.153	29.0	11 P	20.0	0 A	24.5	25.7	25.5	0 0
4	29.89	29.76	29.836	40.0	4 P	27.5	0 A	33.7	32.0	29.0	3.5
5	30.13	29.89	30.085	36.5	3 P	27.5	12 P	32.0	32.7	28.5	3.2
6	30.21	30.09	30.184	29.0	12 P	21.0	9 A	25.0	26.2	25.0	0.2
7	30.27	29.85	30.151	36.5	4 P	20.0	3 A	28.2	30.2	26.5	5.9
8	29.97	29.75	29.897	41.5	11 A	30.0	12 P	35.7	37.0	30.5	6.c
9	30.30	29.97	30.228	34.0	3 P	20.0	12 P	27.0	28.7	22.0	8.0
10	30.33	30.00	30.176	28.0	6 P	9.5	7:30 A	18.7	22.2	17.5	5.4
11	30.29	30.00	30.141	26.0	11 A	11.0	7:30 A	18.5	20.9	18.0	1.0
12	30.39	30.05	30.332	20 0	12 P	6.5	0 A	13.2	14.7	13.7	0.0
13	30.05	29 65	29.730	37.0	5 P	20.0	0 A	28 5	27.8	27.5	1.0
14	30.32	29.92	30.157	28.0	12 M	11.5	12 P	19 7	21.5	17.5	6 6
15	30.63	30.32	30.618	26.0	2 P	3.5	7:30 A	14.7	14.9	9.7	8.3
16	30.60	29.93	30.262	24.0	12 P	4.0	3 A	14.0	14.3	14.2	0.1
17	30.03	29.89	29.990	41.0	1 P	21.0	12 P	31.0	31.6	27.7	6.7
18	30.36	30.02	30.241	26.0	3:30 P	9.5	8 A	17 7	17.0	13.0	6.7
19	30.62	30.36	30.583	26.0	3:30 P	2.0	8 A	14.0	10.1	5.5	7.5
20	30.51	29.77	30.087	26.0	2:30 P	5.0	7 A	15.5	15.0	14.0	0.0
21	30.34	29.96	30.261	36.5	2:30 P	11.0	4 A	23.7	22.9	19.0	8.7
22	30.15	29.65	29.921	39.0	6 P	18.0	0 A	28.5	29.5	25.0	2.8
23	30.58	29.88	30.411	23.0	0 A	−8.0	12 P	7.5	1.7	−2.7	8.8
24	30.61	30.12	30.352	20.0	12 P	−11.0	5 A	4 5	0.1	2.5	3.3
25	30.28	30.09	30.208	38 0	4:30 P	20.0	0 A	29.0	28.7	26.3	0 0
26	30.26	29.91	30.040	41.0	9 P	25.0	3 A	33.0	34.4	33.0	0.0
27	30 42	29.93	30.270	40.0	3 A	6.0	12 A	23.0	17 4	10.7	0.0
28	30.67	30 42	30.622	18.0	5 P	−8 0	7:30 A	5.0	2.1	−5.3	9.1
29	30.66	29.47	30.283	25.0	12 P	−13.0	4 A	6.0	5.0	6.7	0 2
30	29.96	29.19	29 677	30.0	12 P	22.0	0 A	26.0	27 0	23.3	5.7
31	30.19	29.87	30.089	39.0	2:30 P	23 0	8 A	31.0	32.4	25.7	8.2

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	0.0	.063	76.0	N.N.E.	272	3.5	26	1 A				
2	10.0	.644	83.0	N.N.E.	197	1.0	14	8 P	1 P	4:30 P	T	T
3	24.0	.143	94.5	N.N.E.	160	1.0	14	3 A	5 A	5 P	.09	$\frac{1}{4}$
4	26.0	.172	84.5	S.S.W.	106	2.0	20	10 P	7:30 A	8 P	T	T
5	24.0	.174	76.5	W.N.W.	226	2.5	22	6 A				
6	23.0	.141	88.0	N.N.E.	87	0.5	10	3 P	12 M	3 P	T	T
7	21.0	.161	72.0	S.	158	3.5	26	3 P				
8	23.5	.200	62.5	W.	251	3.0	24	9 P				
9	16.0	.134	69.5	W.N.W.	374	3.0	24	3 P				
10	13.0	.112	75.5	W.	37	0.0	—					
11	15 5	.105	85.0	N.N.E.	166	4.0	28	11 A				
12	8.0	.086	95 5	N.	190	1.0	14	6 A	6:30 A	8 P	.20	$1\frac{1}{4}$
13	25.0	.158	86.5	N.N.W.	198	11.0	47	10 P	0 A	8 A	.68	$\frac{3}{4}$
14	14.0	.103	85.0	N.W.	317	8.0	40	9 P				
15	6.5	.072	84 0	N.	152	1.0	14	12 M				
16	12.0	.092	85.5	N.N.W.	24	0.0	—		1:30 P	8 P	.52	$4\frac{1}{4}$
17	25.5	.156	93.0	N.N.W.	116	2.5	22	11 A				
18	10.0	.086	86 0	N.	120	0.5	10	7 P	8 A	8:05 A	T	T
19	4.5	055	85.0	N.	102	0.0	—					
20	9.0	.088	95 5	N.	190	4.0	28	4:30 P	4 A	5 P	.88	7
21	16.0	.110	86.0	N.W.	121	2.5	22	6 A				
22	20.5	.144	77.0	N.N.W.	240	14.0	52	8 P				
23	−8.0	.040	74.5	N.N.W.	406	7.5	39	2:30 A				
24	−5.5	.060	64 0	S.W.	72	2.0	20	9 P				
25	21.5	.155	77.5	S.S.W.	102	1.0	14	3 P				
26	29.5	.203	82 5	S:	85	0.0	—	—				
27	8.5	.076	90.0	N.N.E.	286	7.5	39	5 P	7 A	2:30 P	.13	2
28	−10.0	.037	77.5	N.N.E.	295	11.0	47	4 A				
29	8.0	.069	95.5	'N.	64	2.5	22	11 P	8 A	12 P	.80	$5\frac{3}{4}$
30	18.0	.137	73.0	N.W.	353	10.5	46	12 M	0 A	3 A	.12	$\frac{1}{4}$
31	19.0	.163	66.5	W.N.W.	221	5.5	33	8 P	8 P			

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The month had genuine winter weather throughout with the temperature above freezing but little of the time.

The ground was practically free from snow the first third of the month. After that there was good sleighing for the remainder of the month, and very little thawing occurred. Much cloudiness occurred and the wind movement was large. The last decade of the month was particularly cold.

The records of the several elements show the following as the pronounced features : The mean barometer was exceptionally high and the range practically normal. Nearly the total range for the month occurred however during a period of 28 hours from midnight of the 28th to four A. M. of the 30th. This drop in pressure was fairly steady for the period. The partial recovery in pressure was less rapid. The wind was mostly from near the north and several gales were registered.

The mean hourly temperature was nearly four degrees below the normal and the maximum temperature was about ten degrees lower than usual, making a very low record for this feature. The minimum temperature was six degrees lower than normal for this feature. The mean hourly temperature on the 24th was practically zero.

The mean dew point was rather low and the relative humidity high for this time of year.

The total precipitation was practically normal and the snowfall very large.

More than one half the days were cloudy, a rather unusual record.

J. E. OSTRANDER, Meteorologist.

JAMES BOWER Jr. Observer.

BULLETIN No. 434. FEBRUARY, 1925

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.12, 3rd, 8 A.
Minimum reduced to freezing,	28.91, 26th 1 P.
Reduced maximum reading,	30.44, 3rd, 8 P.
Reduced minimum reading,	29.22, 26th, 1 P.
Mean semi-daily reduced	30.058
Monthly range	1.22

Air Temperature. In Degrees Fahr.

Highest	57.0, 22d, 4.30 P.
Lowest	4.0, 5th 8-30 A.
Mean hourly	31.8
Mean of means of max. and min.	32.1
Mean sensible (wet bulb)	28.4
Monthly range	53.0
Highest mean daily	46.0, 22d
Lowest mean daily	14.0, 27th
Mean maximum	41.1
Mean minimum	23.1
Mean daily range	18.0
Greatest daily range	35.0, 5th
Least daily range	7.5, 27th

Humidity.

Mean dew point	25.2
Mean force of vapor	.178
Mean relative humidity	82.8

Precipitation. In inches.

Total precipitation, in inches	3.64
Total snow, in inches	3¾
Number of days on which .01 inch or more rain fell	8
Days of sleighing	14

Wind.

Total movement	4281m
Greatest daily movement	682m, 27th
Least daily movement	18m, 8th
Mean daily movement	153m
Mean hourly velocity	6.3m

Maximum pressure per square foot, 14.0 lbs = 53m per hour, 26th, 8 P., W.N.W. 27th, 1 P., W.N.W.

Maximum velocity for 5 minutes, 36m per hour, 27th, 1 P., W.N.W.

Prevailing direction, W.S.W.

Summary.

South	14 per cent
South Southwest	14 " "
West	11 " "
North Northwest	11 " "
Other directions	50 " "

Weather.

Mean cloudiness observed	45 per cent
Total cloudiness recorded by the Sun Thermometer	155 hours = 52 per cent.
Number of clear days	6
Number of fair days	11
Number of cloudy days	11

Bright Sunshine.

Number hours recorded, 141 = 48 per cent.

Rain, 2d, 10th, 11th, 12th, 15th, 17th, 23d, 26th.

Snow, 2d, 12th, 26th.

Gales, 53m, 26th, W.N.W.; 53m, 27th, W.N.W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.31	29.84	30.137	44.0	1 P	27.0	12 P	35.5	37.3	32.5	6.8
2	30.32	30.00	30.144	27.0	7 P	19.0	10 A	23.0	23.3	21.5	0.0
3	30.44	30.18	30.423	28.0	4 P	8.5	8 A	18.2	17.0	11.5	8.2
4	30.35	30.12	30.241	29.0	5:30 P	12.5	3 A	20.7	19.0	14.7	3.6
5	30.12	29.80	29.933	39.0	3 P	4.0	8:30 A	21.5	22.7	16.2	7.3
6	30.09	29.82	30.037	48 5	4 P	29 0	2:30 A	38.7	38.4	31.0	9.5
7	30.16	30.09	30.131	50.0	3:30 P	22.0	9 A	36.0	35.9	32.0	6.8
8	30.25	30.19	30.230	52.5	4 P	24 0	9 A	38.2	36.5	33.5	7.2
9	30.26	30.19	30.234	46 0	9:30 P	23.0	9 A	34.5	34.8	32.0	4.1
10	30.21	30.07	30.191	45.0	4:30 P	35.0	6:30 A	40.0	39.0	39.7	0.0
11	30.07	29.60	29.847	48.0	12 P	35 0	4 A	41.5	40.3	40.5	2.7
12	29 60	29.27	29.400	50 0	2 A	29.0	12 P	39.5	39 8	35.2	0.0
13	29.83	29.47	29.725	35.5	3 P	22.5	8:30 A	29 0	30.0	25.2	6.2
14	30.12	29.83	30 074	42.0	3:30 P	26.0	7 A	34 0	32.3	28.0	8.8
15	30.11	29.89	30.026	42.0	1 P	31.0	0 A	36.5	35.8	35.5	0.4
16	30.21	30.09	30.208	48.0	4:30 P	26 0	7:30 A	37.5	34 2	29.5	9.0
17	30.15	29 91	30.018	39.0	6 P	26 0	12 P	32.5	31.9	30.5	0 0
18	30.43	30.14	30.396	31.0	3 P	18.0	8 A	24 5	24 0	19.0	9.3
19	30 41	30.15	30.287	39.0	3 P	13.0	7:30 A	26.0	27.6	23.5	8.1
20	30.30	30.13	30.225	51.0	4 P	25 0	7:30 A	38 0	36.1	29.0	9.4
21	30.34	30.00	30.174	46.5	3 P	22.0	7 A	34.2	36.0	33.0	4.6
22	30.24	30.01	30.209	57.0	4:30 P	36.0	7:30 A	46.5	46.0	36.5	8.5
23	30.21	29.61	29.792	45.0	9 P	33 0	9 A	39.5	38.7	40.0	0.0
24	30.00	29.61	29 893	51.0	5:30 P	35.0	12 P	43 0	41.5	40.7	3.0
25	30.02	29.73	29.904	40.0	5 P	30.0	6 A	35.0	34.6	32.0	0.0
26	29.73	29.22	29.421	34.0	2:30 P	16.0	12 P	25.0	29.0	26.3	0 8
27	30.16	29.67	29.973	18.5	3 P	11.0	7:30 A	14.7	14 0	12.0	8.6
28	30.40	30.16	30.361	24.0	3:30 P	9 0	6 A	16.5	15.7	15.0	8.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Total in Inches. Snow.
1	27.5	.208	73.0	N.N.W.	342	3 0	24	1 P				
2	18.5	.121	87.0	N.	96	1.0	14	10 P	6 A	8 P	.13	$\frac{1}{4}$
3	6.0	.081	74.0	N.N.E.	262	4.0	28	1 A				
4	10.0	.093	75.0	N.N.W.	127	2.0	20	1 P				
5	12.0	.111	78.0	W.	53	0.0	—					
6	26.0	.197	73.5	N.N.W.	124	2.0	20	4 A				
7	29.0	.208	82.5	S.S.E.	71	0.0	—					
8	30.0	.208	83.5	S.S.W.	18	0.0	—					
9	32.0	.191	100.0	W.S.W.	36	1.0	14	3 P				
10	39.5	.244	100.0	S.	59	0.0	—		5:30 A	12 P	.13	
11	40 5	.256	100.0	W.S.W.	40	0.0	—		0 A	12 P	.41	
12	34.5	.215	95 5	S.S.W.	145	2.5	22	11 P	0 A	8 P	1.26	$\frac{1}{4}$
13	19.5	.153	73.0	W.	292	3.5	26	3 P				
14	22.0	.172	70.5	S.W.	228	2.0	20	6 A				
15	33.5	.220	87.0	E.S.E.	109	0.0	—		2 M	6 P	.47	
16	25.0	.183	75.5	S:	36	0.0	—					
17	27.0	.183	82.0	S.W.	86	3.0	24	9 P	10 A	8 P	.30	
18	13.5	.116	72 5	W.	138	1.0	14	0 A				
19	19.5	.147	78.0	S.S.W.	157	4.0	28	2 P				
20	24.5	.178	76 5	S.S.W.	76	0.0	—					
21	31.0	.210	86.5	S.	138	4 0	28	12 M				
22	32.0	.248	72.0	E.	188	1.5	17	6 P				
23	40.0	.252	100.0	S.	74	0.5	10	7 P	12 M	8 P	.22	
24	38.5	.272	86 0	N. E.	119	4 0	28	8 P				
25	29.5	.192	85.5	N. E.	70	0 0	—	—				
26	23.0	.152	84.0	N.	214	14.0	53	8 P	6 A	6 P	.72	$2\frac{3}{4}$
27	8.5	.082	82.0	W.N.W.	682	14.0	53	1 P				
28	12.0	.092	86.0	W.N.W.	296	4.5	30	2 A				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The most noticeable feature of the weather for the month was the comparatively high temperature. Following a comparatively cold January the contrast was especially marked. More than one-half the days averaged above freezing and the large amount of snow on the ground at the beginning of the month had nearly all disappeared by the middle of the month. The mildness continued until nearly the last of the month when the temperature suddenly dropped and the coldest part of the month was recorded.

The recovery in pressure after the very low dip in the barometer on the 26th, gave one of the largest daily wind movements ever recorded at this station. In many respects the month had typical March weather.

The mean barometer was nearly normal and the range less than usual, owing to a low maximum for the month. The total wind movement was considerably less than the normal and there were no gales until near the end of the month when the large daily movement, referred to above, occurred. The wind direction was more variable than usual although the greatest amount was from the southwest quadrant.

The mean temperature was nearly eight degrees higher than the normal and about eleven degrees higher than that of the preceding month. The maximum temperature was about six degrees above the normal and the minimum twelve degrees higher than usual.

The total precipitation was about ten per cent more than normal and nearly all of it was rain.

Owing to some very heavy fog the mean dew point and relative humidity were both very high.

The percentage of cloudiness was high notwithstanding the high temperature.

J. E. OSTRANDER, Meteorologist.

JAMES BOWER Jr. Observer.

Massachusetts ... College,
AMHERST, MASS.

BULLETIN No. 435. MARCH, 1925

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.33, 16th, 8 A.
Minimum reduced to freezing,	29.13, 28th 9 A.
Reduced maximum reading,	30 64, 16th, 8 A.
Reduced minimum reading,	29.42, 28th, 9 A.
Mean semi-daily reduced	30.070
Monthly range	1.22

Air Temperature. In Degrees Fahr.

Highest	74.0, 26th, 5.30 P.
Lowest	7.0, 3d, 7-30 A.
Mean hourly	38.8
Mean of means of max. and min.	39.1
Mean sensible (wet bulb)	34.3
Monthly range	67.0
Highest mean daily	54.7, 27th
Lowest mean daily	15.5, 27th
Mean maximum	49.6
Mean minimum	28.6
Mean daily range	21.0
Greatest daily range	46.5, 26th
Least daily range	9.0, 30th

Humidity.

Mean dew point	30.3
Mean force of vapor	.230
Mean relative humidity	78.4

Precipitation. In inches.

Total precipitation, in inches	4.12
Total snow, in inches	1
Number of days on which .01 inch or more rain fell	15
Days of sleighing	None

Wind.

Total movement	4982m
Greatest daily movement	328m, 15th
Least daily movement	42m, 18th
Mean daily movement	161m
Mean hourly velocity	6.7m

Maximum pressure per square foot, 9.0 lbs= 42m per hour, 21st, 2 P., S.

Maximum velocity for 5 minutes, 24m per hour, 21st, 2 P., S.

Prevailing direction, W., S.W.

Summary.

South	23 per cent
South Southwest	16 " "
Northwest	13 " "
North	10 " "
North Northeast	10 " "
Other directions	28 " "

Weather.

Mean cloudiness observed . . . . 48 per cent

Total cloudiness recorded by the Sun Thermometer . . 179 hours = 48 per cent.

Number of clear days	10
Number of fair days	9
Number of cloudy days	12

Bright Sunshine.

Number hours recorded, 191 = 52 per cent.

Rain, 1st, 5th, 6th. 10th. 11th, 12th, 13th, 14th, 17th, 19th, 25th, 27th, 28th, 29th, 30th.

Snow, 1st.

Gales, 40m, 10th, S.S.W.; 38m, 15th, N.W.; 42m, 21st, S.; 36m. 27th. S.; 35m. 28th. S.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.40	29.51	29.911	37.0	4:30 P	11.0	7:30 A	24 0	26.9	22.5	2.9
2	29.93	29.50	29.807	36.5	4:30 A	11.0	12 P	23.7	25.3	20.7	9 0
3	30.16	29.91	30.095	28.0	4:30 P	7.0	7:30 A	17.5	15.5	13.5	9.7
4	30.16	30.04	30.082	43.5	3 P	19.0	0 A	31.2	31.3	27.7	7.3
5	30.25	30.10	30.200	39.0	3 P	28.5	7 A	33.7	33.7	32.0	0.0
6	30.12	30 04	30.106	57 0	5 P	34 0	0 A	45.5	41.4	34.7	8 5
7	30.21	30.12	30.171	55 0	4:30 P	28.0	7:30 A	41.5	41.0	34.3	9 8
8	30.14	29.89	29 997	50.0	4:30 P	29.0	5 A	39.5	39.5	35.7	4.5
9	30.27	30.00	30.226	49 0	5 P	30 0	0 A	39 5	39.9	32.7	10.7
10	30.28	29.97	30.164	47.5	2:30 P	26.0	3:30 A	36.7	37.2	34.7	4.3
11	30.01	29.87	29.899	60.5	5 P	41 0	0 A	50.7	49.5	45.5	4 4
12	30.34	29.98	30.221	45 0	4 P	34.0	7:30 A	39.5	37.5	31.7	10.8
13	30.47	30.22	30 391	51.0	2 P	23.0	6:30 A	37.0	37.7	33.3	6.8
14	30.22	29.60	29.776	51.0	10 P	34.0	7 A	42 5	40.5	41.0	0.0
15	30.50	29.80	30 280	38.0	4:30 P	28.0	7:30 A	33 0	31.6	27.0	10.3
16	30.64	30.50	30.588	45 0	3:30 P	18.0	7 A	31.5	31.5	28.0	10.2
17	30.50	30.11	30.282	38.5	10 P	28.5	3 A	33.5	33 4	34.0	0 0
18	30.19	30.11	30.161	59.0	4:30 P	31.5	4 A	45.3	43.8	39.7	8.7
19	30.12	29.75	29.944	49.0	7 P	39.0	7:30 A	44 0	43.5	40.3	0 0
20	30.35	30.01	30.246	51.0	4 P	33.5	7 A	42.3	41.1	33.0	9.2
21	30 41	30.18	30.303	57.0	2:30 P	24.0	6:30 A	40 5	41.3	34.0	10.0
22	30.23	30.14	30.192	52.0	1 P	32.0	12 P	42.0	41.5	31.7	9 6
23	30.37	30.22	30.329	48 0	4 P	27.0	6 A	37.5	36.7	30.0	11.2
24	30.44	30.22	30.346	51.0	4 P	21.0	6:30 A	36.0	35.5	31.7	8.0
25	30.22	29 99	30.053	55.0	5 P	34.0	3 A	44 5	41.0	37.0	5.7
26	30.02	29.84	29.943	74.0	5:30 P	27.5	6 A	50.7	49.8	42.3	10 4
27	29.85	29.54	29 687	71.0	2 P	35.0	7 A	53 0	54.7	45.7	7.0
28	29.58	29 42	29.506	60.5	8 A	42.0	12 P	51.3	53.0	50.7	0 0
29	29.77	29.55	29.688	46.0	1:30 P	36.0	12 P	41.0	40.6	37.5	0.0
30	29.81	29.74	29.790	45 0	7 P	36.0	0 A	40.5	42.8	41.7	0 0
31	29.86	29.68	29.794	50.5	2:30 P	39.0	7 A	44.7	44.2	40.5	1.8

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	22.5	.153	83.0	S.	104	3 0	24	11 A	1 P	9 P	1.33	1.
2	16.0	.125	78.0	N.W.	274	6.5	36	6 A				
3	10.0	.091	82.5	N.W.	238	4.0	28	1 A				
4	24.5	.168	81.0	S.S.W.	238	3.5	26	2 P				
5	29.5	.185	92.5	N.	107	0.5	10	9 P	4 P	12 P	.36	
6	31.5	.215	84.0	N.N.E.	178	1.5	17	10 A	0 A	4 A	.04	
7	28.5	.233	69.0	N.E.	99	1.5	17	11 A				
8	33.0	.230	83 0	S.S.W.	55	0.5	10	1 P				
9	25.0	.222	62.5	N.N.E	214	5.0	32	10 A				
10	32.0	.223	83.0	S.S.W.	184	8.0	40	1 P	6:30 A	9 P	.01	
11	41 5	.349	76.5	W.	159	2.0	20	3 P	9:30 P	12 P	.35	
12	26.5	.200	72.0	N.N.W.	231	4.5	30	8 P	0 A	2 A	.07	
13	28.5	.214	75.0	S.	110	2.5	22	9 P	8 P	12 P	.07	
14	41.0	.273	98.0	S.	135	5.5	33	10 P	0 A	8 P	.59	
15	22.0	.163	73.0	N.W.	328	7.0	38	1 A				
16	24.5	.168	78.5	S.	135	3.5	26	6 P				
17	33.0	.202	95.0	N.W.	77	0.0	—		11:30A	12 P	.24	
18	37.0	.222	82.5	W.	42	0.0	—					
19	33.5	.282	77 5	S.E.	91	2.5	22	7 P	6 A	4 P	.54	
20	24.0	.226	60 0	N.N.W.	231	5.5	33	2 P				
21	29.5	.236	75.5	S.S.W.	162	9.0	42	2 P				
22	22.0	.218	57 5	N.	219	3.0	24	8 A				
23	20.5	.198	58.5	N.	226	4.5	30	1 P				
24	26.0	.205	69 5	S.S.W.	86	2.0	20	10 P				
25	34.0	.242	82.0	S.W.	141	2.5	22	4 A	8 A	10 A	.22	
26	37 5	.328	73.5	S.	63	0 0	—	—				
27	42.5	.364	79 0	S.	192	6 5	36	2 P	4:30P	12 P	.02	
28	49.0	.411	86 0	S.	246	6.0	35	10 A	0 A	8 P	.08	
29	37.5	.233	96.0	E.	112	3.0	24	4 P	4 P	12 P	.12	
30	40 5	.274	92.0	N.E.	69	0 0	—	—	0 A	12 P	.08	
31	36.0	.287	74.0	N.N.E.	236	5.0	32	5 P				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The abnormally high temperature which characterized February was prevalent to a considerable degree during March, and in many respects most of the month was like early April. After the first few days of the month the ground was free from snow and the frost began to leave the ground. By the end of the month practically all of the frost was out. The wind movement was low for the time of year and only a few gales were registered. The month closed with the season's advance fully two weeks ahead of normal in many respects.

The mean barometer was slighty higher than the normal and the range of pressure rather small for March. There were however several rather rapid changes in pressure.

The mean hourly temperature was nearly five degrees higher than the March normal and the maximum temperature was more than ten degrees higher than the average for this feature, making a very large range for the month. The range of temperature on the 26th was nearly as large as some of the ranges for a whole month.

The mean dew point was more than four degrees higher than the normal and the relative humidity comparatively high.

The total precipitation was slighty more than the average amount for March and practically all of it occurred as rain. It was well distributed throughout the month.

The wind was rather variable in direction although the amount from the southwest quadrant was most pronounced.

The percentage of sunshine was about the average value.

J. E. OSTRANDER, Meteorologist.

JAMES BOWER Jr. Observer.

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Massachusetts Agricultural College,
AMHERST, MASS.

BULLETIN No. 436. APRIL, 1925

Meteorological Observations

AT THE

MASSACHUSETTS

AGRICULTURAL EXPERIMENT

STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing, 30.23, 21st, 10 A.	
Minimum reduced to freezing, 29.27, 1st, 12 M.	
Reduced maximum reading, 30.53, 21st, 10 A.	
Reduced minimum reading, 29.57, 1st, 12 M.	
Mean semi-daily reduced	30.031
Monthly range	0.96

Air Temperature. In Degrees Fahr.

Highest	82.0, 26th, 3 P.
Lowest	25.5, 21st, 6 A.
Mean hourly	48.0
Mean of means of max. and min.	47.5
Mean sensible (wet bulb)	43.5
Monthly range	56.5
Highest mean daily	67.0, 26th
Lowest mean daily	33.6, 20th
Mean maximum	59.5
Mean minimum	35.5
Mean daily range	24.0
Greatest daily range	42.5, 22d
Least daily range	4.5, 30th

Humidity.

Mean dew point	39.8
Mean force of vapor	.331
Mean relative humidity	78.2

Precipitation. In inches.

Total precipitation, in inches	3.10
Total snow, in inches	3
Number of days on which .01 inch or more rain fell	7

Wind.

Total movement	5268m
Greatest daily movement	284m, 14th
Least daily movement	74m, 2d
Mean daily movement	176m
Mean hourly velocity	7.3m

Maximum pressure per square foot, 11.0 lbs = 47m per hour, 27th, 3 P., N.W.

Maximum velocity for 5 minutes, 28m per hour, 27th, 3 P., N W.

Prevailing direction, Northwest.

Summary.

North	20 per cent
North Northeast	13 " "
South	13 " "
West	13 " "
Northeast	10 " "
Southwest	10 " "
Other directions	21 " "

Weather.

Mean cloudiness observed	34 per cent
Total cloudiness recorded by the Sun Thermometer	162 hours = 40 per cent.
Number of clear days	9
Number of fair days	15
Number of cloudy days	6

Bright Sunshine.

Number hours recorded, 240 = 60 per cent.

Rain, 10th, 13th, 14th, 15th, 19th, 20th, 25th, 30th.

Snow, 15th, 19th, 20th.

Frosts after the 15th, 17th, 21st, 22d.

Gales, 35m, 9th, N.; 40m, 15th, N.W.; 37m, 17th, S.; 47m, 27th, N.W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	29.70	29.57	29 634	48.0	3 P	32 0	6:30 A	40.0	42.4	38.7	5.3
2	29.99	29.70	29.932	60.0	3 P	32.0	6:30 A	46.9	45.9	38.5	7.0
3	30.01	29.89	29 959	60.0	2:30 P	31.0	6 A	45.5	46.5	41.2	7.3
4	30.04	29.94	30.013	59.0	1:30 P	30.5	6:30 A	44.7	46.2	41.0	7.3
5	30.28	30.04	30.251	48.0	4 P	29 0	6:30 A	38.5	39.3	33.2	12.0
6	30.43	30.27	30.360	61 0	5:30 P	28 0	5:30 A	44.5	43.8	38.7	12.0
7	30.31	29.93	30.122	65.5	4 P	27.5	7 A	46.5	51.1	40.0	10.9
8	30.21	29.92	30.062	54.0	4 P	36 0	7 A	45.0	46.3	40.5	11.9
9	30.25	29.94	30.118	66 0	4 P	27.0	7 A	46.5	46.6	40.7	11.0
10	29.94	29.69	29.745	53.0	11 A	42.0	2 A	47.5	47.3	46.3	0.5
11	29.86	29.70	29.791	65.0	3:30 P	37.0	7 A	51.0	50.9	46.0	11.1
12	29.95	29.66	29.848	56 0	4 P	40.0	6:30 A	48.0	47.6	42.7	10.4
13	30.22	29 68	30.136	52.0	6 P	32.0	6 A	24.0	41.0	38.0	9.2
14	30.25	30 04	30 177	56.0	1:30 P	34.0	3 A	45 0	45.3	44.2	6.1
15	30.04	29.67	29.918	74.0	2:30 P	43.0	12 P	58 5	54.8	48.0	5.6
16	30.24	30 02	30.177	53 0	3 P	32 5	6:30 A	42.7	43.3	36.5	9 0
17	30.23	29.98	30.113	59.0	2:30 P	29 0	6:30 A	44 0	45.5	43.0	5.9
18	30.06	29.96	30 024	64.5	4 P	38 0	6 A	51.2	51.9	45.5	10.5
19	30.12	29.80	29.952	45.0	0 A	34.0	12 P	39.5	37.4	36.3	0 0
20	30.41	29.84	30.163	38.5	5 P	29.0	12 P	33.7	33.6	31.5	3.5
21	30.53	30.36	30.456	58.5	5:30 P	25.5	6 A	42.0	42.3	40.7	12.4
22	30.36	30 01	30.175	70.5	5:30 P	28 0	6:30 A	49.2	49.9	42.7	12.0
23	30.00	29.80	29.893	77 0	1:30 P	41 5	6:30 A	59 2	61.2	55.5	7.5
24	30.26	30.00	30.145	63.0	2 P	48 0	6:30 A	55 5	56.1	51.5	4.5
25	30 22	29.95	30.093	63.0	12 M	41.0	6 A	52.0	52.2	49 0	8.5
26	29.98	29.81	29.885	82.0	3 P	53.0	7 A	67.5	67.0	62.5	10 0
27	30.06	29.77	29 900	68.5	1:30 P	50.0	6 A	59 3	60.1	54.0	11.0
28	30.08	30.01	30.072	64.0	5 P	38 0	6 A	51.0	53 1	50.7	7.7
29	30.09	30.04	30 078	56'0	3 P	36.5	6 A	46.3	47.8	45.7	9.5
30	30.04	29.61	29.740	44.5	7:30 P	40.0	7:30 A	42.3	43.1	41.3	0 0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	33.5	.272	71.5	W.	173	3.0	24	10 A				
2	33.0	.273	69.5	N. E.	74	0 0	—	—				
3	36.5	.319	71.0	N.	75	0.5	10	4 P				
4	38.0	.278	81.0	N.	116	3.0	24	1 P				
5	26.0	.231	61.5	N.N.E.	244	4.5	30	11 A				
6	29.0	.304	55.0	N.N.E.	145	3.5	26	8 A				
7	35.5	.294	71.0	S.	172	5 0	32	4 P				
8	34.0	.301	64.5	N.	221	6.0	35	11 A				
9	30.5	.291	74.5	S.W.	167	4.0	28	6 P				
10	45.0	.328	91.0	W.	146	3.0	24	1 A	1:30 P	12 P	.29	
11	41 5	.371	71.0	S W.	132	4.5	30	10 P				
12	38.5	.325	71.0	N.N.E.	246	4.0	28	8 A				
13	34.0	.258	81.0	N.	150	0.5	10	9 A	3 A	8 A	.37	3*
14	43.0	.304	90.5	S.	284	5.0	32	9 A	4 P	5 P	T	
15	47.0	.350	92.5	S.W.	259	8.0	40	3 P	0 A	10 A	.54	
16	31.0	.253	68.5	W. N. W.	216	5 0	32	4 P				
17	30.5	.308	79.3	S.S.W.	243	7.0	37	6 P				
18	42.0	.348	86.5	W.	161	4.0	28	3 P				
19	36.0	.218	95.5	N.E.	146	2.0	20	8 P	8 A	12 P	1.15	
20	30.0	.182	92 0	N.N.E.	270	5.5	33	5 P	0 A	4 P	.16	
21	36.5	.285	78.0	N.	119	2.5	22	1 P				
22	38.0	.338	70.0	S.	174	2.5	22	4 P				
23	53.0	.502	82.0	W.	174	2.5	22	1 P				
24	48.0	.442	77.0	W. N. W.	117	1.5	17	7 P				
25	48 0	.362	92.0	S.	233	5.0	33	3 P	5:30 P	6:30 P	.13	
26	59.0	.666	77.0	W.S.W.	96	2.0	20	5 P				
27	51.0	.496	78 0	N.W.	264	11 0	47	3 P				
28	47.5	.423	79 0	N.	126	1.0	14	10 A				
29	42 0	356	77.5	E.	156	2.0	20	12 M				
30	41.0	.262	98.0	N. E.	169	2.5	22	6 A	6 A	12 P	.46	

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The season's progress which was so marked when the month opened was not maintained during the month. The slowing up was not due to any special feature but was quite marked and the month closed with Spring conditions about normal. There were no unusual features of importance and departures from normals were general small. Perhaps the large amount of wind from the northwest quadrant had considerable influence.

The records of the several weather elements show the following as the more important features: The mean barometer was slightly higher than usual and the range of pressure rather small. This was due to a minimum considerably higher than the normal for this feature.

The mean temperature was less than two degrees above the normal, while both the maximum and minimum records were rather high. The mean hourly temperature on the 26th was that of midsummer. The range of temperature on the 22d was unusually large.

The mean dew point and relative humidity were both very high for this time of year.

The total precipitation was slightly more than the normal and occurred in a comparatively few storms of moderate intensity. The first third of the month was practically without rain.

The total wind movement was a little less than usual and there were but few gales.

The amount of sunshine was considerably more than usual.

J. E. OSTRANDER, Meteorologist.

JAMES BOWER Jr. Observer.

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AMHERST, MASS.

BULLETIN No. 437. MAY, 1925

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.04, 16th, 8 A.
Minimum reduced to freezing,	29.16, 23d. 6 P.
Reduced maximum reading,	30.34 16th, 8 A.
Reduced minimum reading,	29.45, 23d, 6 P.
Mean semi-daily reduced	29.935
Monthly range	0 89

Air Temperature. In Degrees Fahr.

Highest	80.0, 21st, 1:30 P.
Lowest	30.5, 26th 6 A.
Mean hourly	54.6
Mean of means of max. and min.	54 0
Mean sensible (wet bulb)	50.1
Monthly range	49.5
Highest mean daily	62.8, 17th
Lowest mean daily	4.44, 25th
Mean maximum	66.6
Mean minimum	41.5
Mean daily range	25.1
Greatest daily range	37.0, 27th
Least daily range	8.0, 24th

Humidity.

Mean dew point	46.7
Mean force of vapor	.418
Mean relative humidity	79.3

Precipitation. In inches.

Total precipitation, in inches	2.55
Number of days on which .01 inch or more rain fell	12

Wind.

Total movement	4005m
Greatest daily movement	280m, 17th
Least daily movement	40m, 28th
Mean daily movement	129m
Mean hourly velocity	5.2m

Maximum pressure per square foot, 6.0 lbs= 35m per hour, 21st, 5 P., N.W.

Maximum velocity for 5 minutes, 24m per hour, 21st, 3 P., W.

Prevailing direction, West Southwest.

Summary.

South	19 per cent
South Southwest	16 " "
Southwest	13 " "
North	13 " "
West	10 " "
Other directions	29 " "

Weather.

Mean cloudiness observed	54 per cent
Total cloudiness recorded by the Sun Thermometer	211 hours = 47 per cent.
Number of clear days	5
Number of fair days	16
Number of cloudy days	10

Bright Sunshine.

Number hours recorded, 242 = 53 per cent.

Rain, 1st, 2d, 4th, 6th, 11th. 14th, 15th, 17th, 21st, 23d, 24th, 25th, 29th, 30th, 31st.

Frosts, 8th, 19th, 26th.

Thunder and Lightning 17th, 24th 30th

Gales, 35m, 21st, N.W.:

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	29 68	29.61	29.666	58.0	1:30 P	39 0	5 A	48.5	46.2	43.3	1.0
2	29 76	29.63	29.698	56.0	11:30 A	40.0	6 A	48.0	47.5	42.5	3.1
3	29.82	29.75	29 810	63.5	2:30 P	37.0	6 A	50.3	52.0	47 5	6 7
4	29.80	29.56	29.677	69 0	4:30 P	46.0	6:30 A	57.5	57.2	51.0	3.5
5	29.89	29.56	29.736	61.5	3 P	46 0	12 P	53.7	54.8	49.5	7.1
6	30.05	29.89	30.004	59 0	3 P	36 0	6 A	47.5	49.2	48.0	2.2
7	30.03	29.92	30.012	59 0	3 P	38.0	6 A	48.5	48.1	42.5	5.6
8	30.01	29.91	29 953	56.0	3 P	32 0	5 A	44.0	45.6	42.0	9 7
9	30.12	30.01	30.090	66 0	4 P	33 5	5:30 A	49.7	49.4	45.5	9.9
10	30.19	30.07	30.135	68.0	1:30 P	39.0	5 A	53.5	56.8	53.3	9 8
11	30.07	29.95	29.978	63.5	12 M	51 0	12 P	57.2	57.4	55.0	0.0
12	30.12	29.93	30.035	69 0	5 P	44.0	6 A	56.5	55 9	49.7	12.3
13	29.99	29.86	29.930	76.0	4 P	37.0	6 A	56.5	59.1	52.5	12.1
14	30.03	29 83	29.924	74.0	2 P	47.0	6:30 A	60.5	60.0	53.5	8.6
15	30.26	30 03	30.104	64.0	2:30 P	46 0	5 A	55 0	53.1	49.7	4.3
16	30.34	30 06	30.217	74 0	4:30 P	43.0	3 A	58.5	58.4	54.3	10.0
17	30 06	29.69	29.818	74.0	11:30 A	54 0	12 P	64 0	62.8	58.7	10 0
18	30.06	29.90	30 025	66.5	4 P	42.0	5:30 A	54.2	55.4	46.5	10.6
19	30.06	29.98	30 036	70.0	5 P	36.0	5:30 A	53.0	56.0	49.7	12 4
20	30 09	29.93	30.019	78.0	2 P	43.5	6 A	60.7	61.6	53.3	12.6
21	29.98	29.59	29.765	80.0	1:30 P	44.5	6 A	62.2	61.8	51.3	11.0
22	30 05	29.70	29 862	71.0	4 P	42.0	6 A	56 5	58 8	52.3	11.2
23	29.75	29 45	29 527	70 0	0:30 P	47 0	12 P	58 5	59.2	55.3	6 6
24	29.71	29.59	29.662	50.0	3 P	42 0	6 A	46 0	45.5	42.5	2.2
25	29.95	29.68	29.840	54.0	4:30 P	38.5	3 A	46.2	44 4	42.5	4.5
26	30.12	29.95	30 080	66.0	3 P	30.5	6 A	48 2	49.9	45.7	11.9
27	30.20	30.12	30.195	70.0	3 P	35.0	6 A	52 5	54.0	51.3	12.8
28	30.27	30.13	30.226	74.0	5 P	37.0	5:30 A	55.5	57 0	52.7	9 6
29	30.19	30.04	30.133	60.0	12 M	47.5	6 A	53.7	54.7	52.7	3.4
30	30 04	29.86	29 941	72 0	5 P	51.0	6 A	61 5	59.5	58.3	8 2
31	29.94	29.78	29.872	72.0	2 P	41.5	5:30 A	56.7	60.7	59.3	9 5

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	42.0	.293	90.0	S.	162	5.5	33	4 P	10 A	12 P	.11	
2	38.5	.310	75 5	S.W.	106	3 0	24	4 P	8 A	8 P	T	
3	43.5	.376	78 0	S.S.W.	161	2.5	22	6 P				
4	48 5	.414	84.5	S.	212	5.5	33	12 M	6:30 A	12 M	.01	
5	46.0	.402	78.0	N.W.	195	3.0	24	3 P				
6	46.0	.374	80.5	S.S.W.	141	2.0	20	3 P	8 A	8 P	T	
7	37.5	.317	71.5	W.N.W.	143	3.0	24	6 P				
8	38.5	.298	81.0	S.W.	186	5 0	32	3 P				
9	43.0	.336	83.0	S.S.W.	127	2.5	22	10 A				
10	39.5	.467	77.0	S S.W.	112	3.0	24	12 M				
11	53 5	.452	92.5	S.	146	2.0	20	6 A	0 A	6 P	.41	
12	44 0	.448	66.0	W.	97	1.0	14	3 P				
13	57.5	.496	67.0	S.	85	1.0	14	5 P				
14	51.0	.456	82 5	N.E.	130	1.5	17	2 P	4 P	12 P	.31	
15	48.0	.381	90 5	E.N.E.	82	0.0	—		0 A	8 P	.03	
16	51.5	.475	83.0	S.S.W.	97	3 5	26	11 P				
17	55.5	.566	78.0	W.	280	5.0	32	2 P	2 A	4 A	.40	
18	39.5	.405	60.5	N.N.W.	137	1.f	17	12 M				
19	42.0	.470	58.0	N.	78	2 0	20	2 P				
20	47.5	.526	63.0	S.	187	4.0	28	4 P				
21	44.0	.499	59.0	W.	189	6.0	35	5 P	3 P	3:30 P	T	
22	47.5	.466	71.5	W.N.W.	119	3 5	26	8 P				
23	54.5	.468	92.5	N W.	184	4.0	28	12 M	3 A	12 P	.25	
24	40.5	.285	89 0	N.	144	0.5	10	2 A	8 A	12 P	.53	
25	41.5	282	92 5	N.N.E	134	1.5	17	10 A	8 A	12 P	.04	
26	40.5	.362	70.5	N.	81	3.0	24	3 A				
27	48.0	.426	79 0	N.	84	2 0	20	4 P				
28	51.0	.432	90 0	S.	40	0.0	—	—				
29	50.5	.442	84.5	S.W.	70	0.0	—	—	11:30A	8 P	.21	
30	57 5	.508	97 0	E.N.E.	46	2.0	20	9 P	0 A	10 P	.19	
31	58.5	.534	92.5	S.W.	50	0.0	—		8 P	10 P	.06	

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during May was disappointing in general and the prospect of an early season disappeared. Considerable cloudiness and low temperature, especially during the last part of the month, caused this unfavorable condition. The wind was rather persistantly from the Southwest quadrant and the total movement was rather small. On the 26th freezing temperature was registered and some damage was done. The damage, however, was small owing largely to the foggy condition of the air in the early morning of that day.

A comparison of the records of the several weather elements with their respective normals shows the following features: The mean barometer was rather low and the range of pressure practically normal. Changes in pressure were generally small and rather slow, and there was very little high wind.

Only a few thunderstorms were noted and they were of moderate intensity.

The mean temperature was three degrees lower than the normal, and the range small for the month. Nearly one-third of the days had a mean hourly temperature below 50 degrees. The last week was especially cool.

The mean dew point was nearly normal while the relative humidity was high.

The total precipitation was about two-thirds of the normal and it occurred during frequent small storms.

The observed cloudiness was practically normal.

J. E. OSTRANDER, Meteorologist.

JAMES BOWER Jr. Observer.

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BULLETIN No. 438. JUNE, 1925

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.03, 13th, 8 A.
Minimum reduced to freezing,	29.28, 18th, 2 P.
Reduced maximum reading,	30.32, 13th, 8 A.
Reduced minimum reading,	29.56, 18th, 2 P.
Mean semi-daily reduced	.29.958
Monthly range	0.74

Air Temperature. In Degrees Fahr.

Highest	97.0, 7th, 4 P.
Lowest	42.0, 12th, 5:30 A; 24th 6 A.
Mean hourly	69.6
Mean of means of max. and min.	69.2
Mean sensible (wet bulb)	63.3
Monthly range	55.0
Highest mean daily	86.1, 6th
Lowest mean daily	53.8, 25th
Mean maximum	81.4
Mean minimum	57.1
Mean daily range	24.3
Greatest daily range	38.5, 17th
Least daily range	5.0, 25th

Humidity.

Mean dew point	60.6
Mean force of vapor	.709
Mean relative humidity	78.1

Precipitation. In inches.

Total precipitation, in inches	4.28
Number of days on which .01 inch or more rain fell	13

Wind.

Total movement	4072.m
Greatest daily movement	255m, 11th
Least daily movement	59m, 8th
Mean daily movement	136m
Mean hourly velocity	5.7m

Maximum pressure per square foot, 13.0 lbs= 51m per hour, 1st, 5 P., N.N.W.

Maximum velocity for 5 minutes, 30m per hour, 1st, 5 P., N.N.W.

Prevailing direction, Southwest.

Summary.

South Southwest	27 per cent
South	17 " "
North	10 " "
Southwest	10 " "
West Northwest	10 " "
Other directions	26 " "

Weather.

Mean cloudiness observed	53 per cent
Total cloudiness recorded by the Sun Thermometer	160 hours = 35 per cent
Number of clear days	13
Number of fair days	12
Number of cloudy days	5

Bright Sunshine.

Number hours recorded, 297 = 65 per cent.

Rain, 1st, 2d, 9th, 10th, 14th, 15th, 16th, 18th, 21st, 23d, 24th, 25th, 28th, 29th, 30th.

Hail, 21st.

Thunder and Lightning, 1st, 9th, 15th, 18th, 21st, 27th, 28th, 29th.

Gales, 51m, 1st, N.N.W.; 35m, 5th, N.W.; 39m, 16th, N.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean, Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	29.96	29.71	29.844	84.0	5 P	61.0	6 A	72.5	70.3	64.5	8.6
2	30.11	29.96	30.017	83.5	6:30 P	59.0	4 A	71.2	70.2	68.7	7.2
3	30 05	29.99	30.022	93.5	5:30 P	63.5	6 A	78.5	79.3	72.5	13 0
4	30.03	29.96	30.004	93.0	4 P	69.0	6 A	81.0	80.3	76.2	13.3
5	30.06	29.92	29.999	93.0	5 P	70 5	5:30 A	81.7	84.2	75.0	13.4
6	29.92	29.80	29.862	94 0	3 P	73.5	6 A	83 7	86 1	76.7	14.2
7	30.01	29.78	29 862	97.0	4 P	61 0	12 P	79.0	77.7	68.5	3.5
8	29.99	29.91	29.957	81.5	4 P	55.5	5:30 A	68.5	66.1	62.7	0 0
9	29.93	29.82	29.890	80.5	3 P	57.0	5 A	68.7	67.7	63.2	8.0
10	29.87	29.71	29.839	85.0	2:30 P	59.0	12 P	72.0	70.3	62.0	8 0
11	30 22	29.88	30.094	74.0	5 P	52.0	5:30 A	63.0	62.7	53.5	8 5
12	30.31	30.22	30.275	76.5	4 P	42.0	5:30 A	59 2	63.6	57.2	14.2
13	30.32	30.21	29 275	76.5	3:30 P	49 0	6 A	62.7	66.1	59.5	13.3
14	30.21	30.07	30.130	81 5	2:30 P	60 5	3 A	71.0	70.8	68.5	8.0
15	30.09	29.71	29.949	90.0	2:30 P	62.0	6 A	76.0	74.9	69.0	9.8
16	29.99	29.57	29.712	75.5	10:30 A	55.0	12 P	65.3	68.4	59.7	10 7
17	30.06	29.87	29.980	81.0	4:30 P	42.5	5 A	61.7	64.5	57.3	13 0
18	29.87	29 56	29.627	85.5	3 P	60.0	3 A	72.7	71.8	64.3	10.2
19	29 85	29.68	29.818	87.5	4 P	58.0	5:30 A	72 7	71.9	69.5	13 3
20	29.96	29.75	29.881	83.5	3 P	54 0	5 A	68.7	69.5	64.3	11.6
21	29.81	29.71	29 790	80.5	4 P	54.5	5 A	67.5	68.0	61.7	12.2
22	29.80	29.73	29.782	75.0	3:30 P	51.0	5 A	63.0	64.4	55.5	12.6
23	30.04	29.71	29.916	73.5	4:30 P	56.0	5:30 A	64.7	63.4	58.5	11.2
24	30.17	30.04	30.151	75.5	4:30 P	42 0	5:30 A	58.7	61.0	54.7	12.2
25	30.09	29 76	29.825	56 5	5 P	51.5	3 A	54.0	53.8	52.7	0.0
26	30.00	29.78	29.927	79.0	3:30 P	53 0	6 A	66.0	66.3	61.3	12.7
27	30.05	29.97	30.022	83.5	2:30 P	59.0	5:30 A	71.3	72.5	67.3	10 8
28	30.11	30 02	30.071	76.0	2 P	67 0	6:30 A	71.5	72.3	68.7	5 2
29	30.18	30 01	30 126	77.0	1 P	62.0	12 P	69 5	68.0	65.0	6.0
30	30.12	29 99	30 094	67 5	12 M	52.0	12 P	59.7	61.4	52.3	12 1

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	63.5	.623	96.0	S.W.	160	13.0	51	5 P	0 A	6 P	.39	
2	67.0	.672	90.0	S.S.E.	62	1.0	14	8 P	1:30 A	12 A	.08	
3	70.0	.956	75.5	S.S.W.	100	1.5	17	1 A				
4	73 0	1.137	73.0	W.	195	4.5	30	1 P				
5	72.0	1.126	69 5	W.N.W.	117	6.0	35	12 P				
6	73.5	1.219	68.5	N.W.	238	4.5	30	12 M				
7	65.5	.888	75.5	S.	70	2.0	20	5 P				
8	60.0	.587	80.0	S.S.E.	59	0.0	—					
9	61.5	.634	87.0	S.	75	0.5	10	5 P	4 P	8 P	.15	
10	60 0	.661	82.0	S.S.W.	154	3.5	26	7 P	3 P		T	
11	49.0	.521	67.0	N.	255	5.0	32	7 A				
12	53.0	.579	72.0	S.	94	1.0	14	7 P				
13	55.5	.640	68.5	S.S.W.	169	3.0	24	2 P				
14	66.5	.755	89.0	S.S.W.	172	4.5	30	4 P	3 P	3:30 P	.05	
15	67.5	.773	88.0	S.	86	2.0	20	5 P	4 P	12 P	.34	
16	55.0	.627	72.0	W.	223	7.5	39	3 P	0 A	11:30A	.02	
17	52.0	.639	61.0	S.W.	70	1.5	17	4 P				
18	61.0	.727	75.5	S.W.	207	5.5	33	6 P	2 A	7 A	T	
19	59.5	.706	72.0	N.	144	0.0	—					
20	60.5	.730	75 0	S.S.W.	71	2.0	20	6 P				
21	58.5	.644	78.5	N W.	122	2.0	20	6 P	6 P	12 P	.46	
22	48.5	.594	59.5	N.N.W.	170	3 0	24	5 P				
23	56.0	.566	79.0	N.	108	1.5	17	4 P	9:30 P	12 P	.05	
24	50.0	.560	67 0	S S.W.	63	2.5	22	7 P	0 A	1:30 A	.06	
25	52.5	.405	98.5	N.N.E.	114	0.0	—		6 A	9 P	1.20	
26	58.0	.628	79 0	S.	91	1.0	14	10 P				
27	66.0	.725	89.0	S.S.W.	177	4.0	28	2 P				
28	68.0	.737	93 0	S S.W.	219	4 0	28	3 P	6 A	12 P	.18	
29	68 0	.660	91.5	W.N.W.	104	3.0	24	2 P	10 A	12 P	1.28	
30	58.5	.508	97.0	W.N.W.	183	5.0	32	2 P	0 A	3 A	.02	

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during June was more variable than usual and showed some unusual features. The first week was an exceptionally warm period with several days showing a mean hourly temperature of over eighty degrees, and one day, the 6th, averaged more than eighty-six degrees, an exceptionally high record for this station. On the other hand, the last half of the month was considerably cooler than usual. Thunder storms were frequent and the one on the 21st was accompanied by considerable hail which, however, did but little damage. The last third of the month was generally rainy and two storms of more than an inch each, made the rainfall for the month about an inch more than the normal. The hourly temperature on the 25th of less than fifty-four degrees was very low for this time of year.

The records of the several weather elements show the following features of interest: The mean barometer was practically normal and the range of pressure about the usual amount. The changes in pressure were generally small and slow. A rather heavy gale was registered on the 1st.

The total wind movement was about ten per cent more than normal and the most of it came from the southwest quadrant.

The mean temperature was more than three degrees higher than usual, owing to the hot wave early in the month. The maximum and minimum temperatures were both considerably above their respective normals.

The mean dew point and relative humidity were both rather high.

The amount of bright sunshine was much above the average.

J. E. OSTRANDER, Meteorologist.

E. H. WHEELER Acting Observer.

BULLETIN No. 439. JULY, 1925

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	29.87, 9th, 9 A.
Minimum reduced to freezing,	29.36, 16th, 5 P.
Reduced maximum reading,	30.16, 9th, 9 A.
Reduced minimum reading,	29.64, 16th, 5 P.
Mean semi-daily reduced	.29.923
Monthly range	0.52

Air Temperature. In Degrees Fahr.

Highest	91.5, 7th, 2:30 P.
Lowest	47.5, 1st 5 A.
Mean hourly	69.6
Mean of means of max. and min.	69.1
Mean sensible (wet bulb)	65.0
Monthly range	44.0
Highest mean daily	77.9, 12th
Lowest mean daily	63.3, 31st
Mean maximum	79.7
Mean minimum	58.6
Mean daily range	21.1
Greatest daily range	32.5, 15th
Least daily range	4.5, 26th

Humidity.

Mean dew point	62.3
Mean force of vapor	.706
Mean relative humidity	81.6

Precipitation. In inches.

Total precipitation, in inches	6.97
Number of days on which .01 inch or more rain fell	13

Wind.

Total movement	3292.m
Greatest daily movement	248m, 16th
Least daily movement	47m, 20th
Mean daily movement	106m
Mean hourly velocity	4.4m

Maximum pressure per square foot, 5.5 lbs= 33m per hour, 7th, 5 P., S.S.W.

Maximum velocity for 5 minutes, 21m per hour, 16th, 12 M., S W.

Prevailing direction, West Southwest.

Summary.

South Southwest	23 per cent
South	13 " "
Southwest	13 " "
North	10 " "
West	10 " "
West Northwest	10 " "
Other directions	21 " "

Weather.

Mean cloudiness observed	51 per cent
Total cloudiness recorded by the Sun Thermometer	174 hours = 38 per cent
Number of clear days	14
Number of fair days	11
Number of cloudy days	6

Bright Sunshine.

Number hours recorded, 288 = 62 per cent.

Rain. 4th, 5th, 7th, 8th, 10th, 16th. 17th, 21st, 22d, 25th, 26th, 27th, 28th, 29th, 31st.

Thunder and Lightning. 7th, 16th, , 22d, 25th, 26th. 27th, 28th.

Gales. None.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper	Mean Sensible Wet Bulb.	
1	30.12	29.97	30.052	75.5	2:30 P	47.5	5 A	61.5	64 2	59.2	12 0
2	29.97	29.79	29.826	77.0	4:30 P	62 0	4 A	69 5	67.8	61.2	8.0
3	30.06	29.88	30.010	78 5	2:30 P	55.0	5:30 A	66.7	67.4	60.5	12.3
4	30.06	29.83	29.996	72.0	6 P	54.0	5 A	63.0	64.6	61.0	3.5
5	30.09	29.93	29.998	87.0	5:30 P	63.0	5 A	75.0	73.7	67.7	10.3
6	30.15	29.98	30 069	89.0	4:30 P	57.5	5:30 A	73 3	75.1	69.7	12.2
7	29.98	29.72	29.857	91.5	2:30 P	67 5	3 A	79.5	76.4	73.0	7.3
8	30.06	29.87	30.040	82.5	5 P	67.0	7:30 A	74.7	73.9	66.5	10.2
9	30.16	30 02	30.101	82 5	5 P	58 5	6 A	70.5	70.9	63.7	12.1
10	30.02	29.80	29.871	80.0	6:30 P	62.5	6 A	71.3	70.2	68.7	5 9
11	29 88	29.83	29 849	86.5	5 P	56.5	6 A	71.5	75 3	68.0	12.2
12	29.83	29 74	29.762	87.5	2 P	67 0	5 A	77.3	77.9	71.3	13 1
13	29.89	29.84	29.869	79.5	5 P	56.5	5:30 A	68 0	69.5	63.7	11.9
14	29.97	29.88	29.938	84.0	5:30 P	58.0	6 A	71.0	70.1	64.3	12.6
15	30.00	29.89	29 961	80.0	4:30 P	55.0	5 A	67.5	69.1	63.7	11.0
16	29.89	29.64	29.747	81.0	3 P	67.0	12 P	74.0	74.0	69.3	6.8
17	29.80	29.65	29.712	81.0	3 P	65.0	12 P	73.0	72.0	66 7	9 5
18	29.97	29.80	29.841	73.5	2 P	56.0	5:30 A	64.7	69.5	67.5	11.3
19	30.05	29.97	30.042	82.5	4 P	53.0	5 P	67 7	69.0	63 5	12.8
20	30.11	30.05	30.084	86.0	4:30 P	53.5	5:30 A	69.7	71.2	64 5	13 0
21	30.08	29 90	30.951	71.0	8 A	62 0	4:30 A	66.5	67.0	67.3	0 8
22	29.99	29.79	29.893	73.5	1 P	65 0	5 P	69.0	68 6	69.0	0 0
23	30.04	29.90	29 978	75.5	3:30 P	58.0	6:30 A	66 7	68.1	61.0	12.3
24	30.08	30.00	30.05[illegible]	81.0	2:30 P	53.0	5 A	67.0	68 1	63.5	12.7
25	30 07	29.95	30.018	83.5	4 P	53 5	6 A	68 5	69.0	65.0	10.2
26	29.95	29 75	29.843	70.0	1 P	65.5	10 P	67.7	67.4	66 0	0.0
27	29 76	29.68	29.708	73.0	1 P	62 0	5:30 A	67.5	67.0	64.5	2.7
28	29.75	29 68	29.726	83.5	4 P	60.5	6 A	70.0	70.4	67.0	11.1
29	29.84	29 73	29 795	73 5	2:30 P	55.0	12 P	64.3	64.5	58.7	11.1
30	30.00	29.84	29 972	76 0	3:30 P	49.0	5:30 A	62.5	63.6	58.5	13.0
31	30.03	29.93	29.982	73.5	12 M	52.0	6 A	63.7	63.3	60.5	6 0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	55.5	.640	79.5	N.W.	135	1.5	17	12 M				
2	58 5	.624	80 0	W.	129	1.0	14	12 M				
3	50.0	.636	71.5	E.	132	1.0	14	6 A				
4	59.5	.594	84.5	S.S.W.	131	2.0	20	12 M	2:30 P		T	
5	65.0	.780	81.5	W.	94	0.0	—		1:30 A	6 A	.36	
6	67.5	.843	82.0	S.W.	84	1.5	17	8 P				
7	72.5	.859	92.0	S.S.W.	159	5.5	33	5 P	2:30 P	8 P	.99	
8	65.0	.734	83.5	N.N.E.	79	0.0	—		0 A	6 A	T	
9	60.5	.703	75.0	W.N.W.	115	2.0	20	7 P				
10	68.0	.737	95.0	S.S.W.	117	0.0	—		7 A	11 A	.10	
11	64.5	.846	72.5	S.W.	76	0.0	—					
12	67.5	1.010	67.5	N.	151	2.0	20	10 A				
13	60 0	.712	74.0	N.E.	100	0.0	—					
14	60.5	.720	75.0	N.E.	60	0.0	—					
15	61.5	660	86.0	S S.W.	102	2.0	20	3 P				
16	68 0	.753	91.0	S.W.	248	4.5	30	2 P	6:30 P	12 P	.54	
17	64.5	.734	84.5	N.W.	84	0.0	—		0 A	2 A	.04	
18	59.5	.650	80.0	N.W.	103	1.0	14	2 P				
19	61.0	.681	79 5	N.	57	0.0	—					
20	61.5	.701	77.5	S.	47	0 0	—					
21	63.5	.710	86.5	S.	118	1.5	17	5 P	10:30 A	12 P	.44	
22	69.0	.720	97.5	S.	133	4.0	28	2 P	0 A	8 P	2.02	
23	56 5	.662	70 5	W.N.W.	126	1.5	17	1 P				
24	60 0	.698	75.0	W.	115	1.0	14	1 P				
25	62.0	.714	78.5	S.S.W.	50	0.0	—		10:30 P	12 P	.05	
26	66.0	.660	95 0	S.	112	0.0	—		0 A	12 P	.74	
27	63.5	.620	96.0	N.N.E.	71	0.0	—		0 A	8 A	1.30	
28	65 0	.741	84.5	S.S.W.	61	4.0	28	9 P	8:30 P	12 P	.14	
29	55.0	.598	73 0	N.	129	2.5	22	12 M	0 A	2 A	.01	
30	54.0	.610	67.5	S.W.	111	1.5	17	12 M				
31	59 0	.548	94.5	S.S.W.	63	1.5	17	1 P	4.30 P	12 P	.04	

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was generally pleasant except for the several heavy rains which occurred especially the last decade of the month. The tempereture registered above ninety degrees on only a single day, while the minimum temperature was below sixty on nearly one-half the days. The last half of the month was rather cool for the time of year.

The rainfall was especially large and two storms of more than two inches each were only a few days apart, near the last of the month.

The mean barometer was rather low and the range of pressure exceptionally small, which accounts for the comparatively small wind movement. There were no gales registered and only one day had a total movement greater than two hundred miles.

The mean temperature was slightly less than the normal and the range of temperature less than usual. The maximum and minimum records were both lower than their normals.

The mean dew-point was practically normal and the relative humidity was high.

The total precipitation was about sixty per cent more than usual and most of it occurred in rather heavy, well defined storms.

Much of the wind was from the southwest quadrant.

The amount of sunshine was well above the average.

J. E. OSTRANDER, Meteorologist.

E. H. WHEELER Acting Observer.

BULLETIN No. 440. AUGUST, 1925

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.12, 29th, 8 A.
Minimum reduced to freezing,	29.46, 1st, 3 P.
Reduced maximum reading,	30.42, 29th, 8 A.
Reduced minimum reading,	29.72, 1st, 3 P.
Mean semi-daily reduced	.30.058
Monthly range	0.70

Air Temperature. In Degrees Fahr.

Highest	90.5, 18th, 4 P.
Lowest	39.0, 29th, 6:30 A.
Mean hourly	67.7
Mean of means of max. and min.	68.0
Mean sensible (wet bulb)	62.3
Monthly range	51.5
Highest mean daily	75.6, 10th
Lowest mean daily	56.1, 28th
Mean maximum	80.3
Mean minimum	55.7
Mean daily range	24.6
Greatest daily range	39.0, 29th
Least daily range	5.5, 6th

Humidity.

Mean dew point	60.5
Mean force of vapor	.639
Mean relative humidity	84.3

Precipitation. In inches.

Total precipitation, in inches	1.93
Number of days on which .01 inch or more rain fell	7

Wind.

Total movement	2270.m
Greatest daily movement	231m, 27th
Least daily movement	24m, 4th, 5th,
Mean daily movement	73m
Mean hourly velocity	3.0m

Maximum pressure per square foot, 6.5 lbs= 36m per hour, 11th, 1P., N.W.

Maximum velocity for 5 minutes, 18m per hour, 11th, 1 P., N.W.

Prevailing direction, West Southwest.

Summary.

South	23 per cent
North	13 " "
South Southwest	13 " "
West	13 " "
Southwest	10 " "
Other directions	28 " "

Weather.

Mean cloudiness observed	37 per cent
Total cloudiness recorded by the Sun Thermometer	149 hours = 35 per cent
Number of clear days	14
Number of fair days	12
Number of cloudy days	5

Bright Sunshine.

Number hours recorded, 280 = 65 per cent.

Rain, 1st, 4th, 5th, 7th, 9th, 10th. 13th, 14th, 19th, 21st, 26th,

Thunder and Lightning, 7th, 9th, , 10th 19th.

Gales, 36 m. 11th. N.W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	29.89	29.72	29.787	77.5	3:30 P	61.5	12 P	69.5	66.8	61.5	6 0
2	30.08	29.89	30.014	82.0	5 P	56.0	2:30 A	69 0	72.5	63.7	10.6
3	30.19	30 08	30.157	85.5	3:30 P	57.0	5:30 A	71.3	71.3	65.3	12.1
4	30.24	30.19	30.235	87.0	4 P	60.0	5:30 A	73.5	71.2	65.7	10.2
5	30.21	30.11	30.164	72.5	3 P	58.5	6:30 A	65.5	66.3	65.3	2.3
6	30.11	29.95	30 005	68.5	4 P	63.0	6 A	65 7	66.1	64.5	0.0
7	29.95	29.86	29.912	80.0	2 P	61 0	12 P	70.5	68.8	64.7	7.8
8	29.93	29.86	29.906	84.5	2:30 P	56.0	5 A	70.3	69.5	65.7	10.2
9	29.93	29.82	29 896	77.5	3:30 P	63 5	4:30 A	70.5	69.4	68.3	3.8
10	29.87	29.77	29.798	85.0	1:30 P	68.5	5 A	76.7	75.6	70.5	10.3
11	29 90	29.78	29 831	79.0	2 P	62.0	6 A	70.5	70 8	64.3	11.5
12	29 95	29 90	29.924	79.5	2:30 P	54.5	6 A	67.0	67.7	62 3	12.3
13	29.93	29.84	29.885	63.0	12 M	56.0	6 A	59.5	59 9	59.3	0.0
14	29.94	29.80	29.866	80.0	4:30 P	58.0	0 A	69.0	67.0	64.5	6.7
15	30.12	29.94	20 066	84.0	3 P	55.0	6 A	69.5	69.3	65.0	12.2
16	30.21	30.12	30.194	87.0	4:30 P	58.0	6 A	72.5	71.0	66.0	12.2
17	30.23	30.13	30.188	88.5	3:30 P	56.5	6:30 A	72.5	71.9	64.3	11.1
18	30.15	30.02	30.073	90.5	4 P	57.5	6:30 A	74.0	72.6	65.7	9.9
19	30.04	29.88	29.949	86.0	3:30 P	62.5	6 A	74 3	73.7	66.3	8.8
20	29.89	29.76	29.773	80.5	2 P	64.0	6:30 A	72.3	71.8	66 0	10.0
21	30.01	29.78	29.913	66.0	0 A	51.0	12 P	58.5	58.8	55.0	0.8
22	30.27	30.01	30.205	73.0	4 P	43 0	6 A	58 0	58.2	54.5	12.4
23	30.38	30.27	30.333	80.5	4 P	43.5	6 A	62.0	63.3	58.7	12.0
24	30.41	30.34	30.383	86.5	4:30 P	49.5	6:30 A	68.0	68 c	62.0	11.4
25	30 35	30.16	30.269	88.5	3:30 P	55 5	6 A	72 0	70.7	63.3	11.0
26	30.16	29.94	30.013	86 0	3 P	58.0	6:30 A	72.0	71.5	65 7	8.4
27	30.24	30.06	30.184	69.0	4 P	47 0	12 P	58.0	59.1	52.0	12.0
28	30.33	30.24	30.313	73.0	4:30 P	39.5	6 A	56.3	56.1	50.0	11.7
29	30.42	30.27	30.349	78.0	3:30 P	39 0	6:30 A	58.5	59.4	54.3	11.7
30	30.27	30.12	30 199	86 0	3 P	50.5	6:30 A	68.3	68.2	61.0	11.0
31	30.12	29.94	30.013	86.0	4:30 P	62.0	1:30 A	74.0	72.0	65.5	9.2

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	59.5	.602	86.0	W.	95	1.5	17	4 P	0 A	8 A	.87	
2	61.0	.684	79.5	W.	92	0.0						
3	63.0	.712	82.0	W.	34	0.0						
4	64.5	.676	90.0	W.S.W.	24	0.0			5:30 P	8 P	T	
5	64.5	.634	97.5	S.S.E.	24	0.0	—		11 A	12 P	.04	
6	63.5	.647	90.0	E.S.E.	28	0.0						
7	64.0	.629	96.0	W.N.W.	57	0.5	10	5 P	0 A	6 P	05	
8	65.0	.679	92.5	S.	27	0.0	—					
9	68.5	.706	98.0	S.	53	0.0	—		6:30 A	12 P	.32	
10	69.5	.824	86.0	S.W.	116	2.5	22	2 P	0 A	12 P	.19	
11	60.5	.741	72.5	W.	164	6.5	36	1 P				
12	60.5	.624	84.0	N.N.W.	89	0.0	—					
13	58 5	.514	97.0	N.N.W.	38	0.0	—		8 A	12 P	37	
14	63.5	.639	94 0	N.	60	0.0	—		3:30 P		T	
15	63.5	.664	69.0	N.W.	47	0.0	—					
16	64 0	.708	85.5	N.	33	0.0	—					
17	61.5	.700	80.0	S.	34	0.0	—					
18	64.0	.720	85.5	S.	44	0.0	—					
19	64.5	.730	83.5	S.S.W.	84	1.0	14	3 P	8:30P		T	
20	63.5	.740	80.0	S.W.	128	3 5	26	2 P				
21	54.0	.468	88.0	N.N.E.	77	0.0	—		7:30 A	12 M	.09	
22	52.0	.477	81.5	N.	95	1.5	17	2 P				
23	55 5	.563	80.0	S.S.W.	38	0.0	—					
24	59.5	.620	84.5	S.S.W.	41	0.0	—					
25	61.0	.650	85.0	S.	41	0.0	—					
26	62.5	.732	80.0	S.W.	114	1.0	14	11 P	4 P		T	
27	47.5	.464	72.0	N.N.E.	231	2.5	22	11 A				
28	46 0	.422	74.0	N.	81	1.5	17	11 A				
29	51.0	.502	76 5	S.	66	1.0	14	3 P				
30	56.5	.642	74.0	S.	125	0.5	10	1 P				
31	64 0	.689	88.5	S.S.W.	90	0.5	10	2 P				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during August was generally pleasant and free from disagreeable features. The precipitation was light and practically all of it occurred before the middle of the month. The last half of the month was marked by a generally high barometer, clear skies and considerable low temperature at night. The total wind movement was unusually small and many days showed no pressure on the wind pressure chart. There was only one gale registered. The wind was largely from the Southwest quadrant.

The records of the several weather elements show the following features : The mean barometer was high for the time of year and the range of pressure was practically normal. As might be inferred from the wind record the changes in pressure were generally slow and small. The period of highest barometer, near the end of the month, was accompanied by low temperature which threatened frost. Traces of frost on low land in this vicinity were reported on the mornings of the 28th and 29th.

The mean temperature was practically normal and the range considerably greater than usual. The temperature went above 90 degrees on only one day.

The mean dew point was practically normal while the relative humidity was exceptionally high.

The total precipitation was less than one-half the usual amount and most of the storms were light. There were only a few thunder storms.

The total wind movement was but little more than two-thirds the normal amount.

The amount of sunshine was large and only a few cloudy days occurred.

J. E. OSTRANDER, Meteorologist

E. H. WHEELER Acting Observer.

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BULLETIN No. 441. SEPTEMBER 1925

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing, 30.28, 26th, 11 A.	
Minimum reduced to freezing, 29.35, 21st, 1 A.	
Reduced maximum reading, 30.59, 26th, 11 A.	
Reduced minimum reading, 29.64, 21st, 1 A.	
Mean semi-daily reduced	30.045
Monthly range	0.95

Air Temperature. In Degrees Fahr.

Highest	86.0, 11th, 4 P.
Lowest	26.0, 26th, 6:30 A.
Mean hourly	61.1
Mean of means of max. and min.	61.0
Mean sensible (wet bulb)	56.7
Monthly range	60.0
Highest mean daily	75.7, 11th
Lowest mean daily	45.5, 23d
Mean maximum	71.7
Mean minimum	50.3
Mean daily range	21.4
Greatest daily range	40.0, 26th
Least daily range	4.0, 16th

Humidity.

Mean dew point	54.1
Mean force of vapor	.536
Mean relative humidity	83.9

Precipitation. In inches.

Total precipitation, in inches	3.09
Number of days on which .01 inch or more rain fell	13

Wind.

Total movement	3355.m
Greatest daily movement	233m, 21st
Least daily movement	36m, 4th
Mean daily movement	112 m
Mean hourly velocity	4.7m

Maximum pressure per square foot, 5.0 lbs = 32m per hour, 21st, 5P., S.S.W.

Maximum velocity for 5 minutes, 20m per hour, 21st, 2 P., S.S.W.

Prevailing direction, West.

Summary.

North Northeast	30 per cent
South Southwest	23 " "
South	13 " "
North	10 " "
Other directions	24 " "

Weather.

Mean cloudiness observed	57 per cent
Total cloudiness recorded by the Sun Thermometer	191 hours = 51 per cent
Number of clear days	6
Number of fair days	11
Number of cloudy days	13

Bright Sunshine.

Number hours recorded, 182 = 49 per cent.

Rain, 3d, 4th, 6th, 7th, 8th, 12th, 13th, 14th, 15th, 16th, 17th, 24th, 27th, 28th.

Frosts, 23d, 25th, 26th.

Thunder and Lightning, 12th.

Gales, None.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.03	29.96	30.010	80 0	3:30 P	53.0	6:30 A	66.5	67.4	61.5	10.8
2	30.06	29.96	30.025	78.0	4 P	48.0	6 A	63.0	63 7	58.3	10.1
3	30.00	29.89	29.965	62.5	0:30 P	55.0	6:30 A	58.7	59.5	57.7	0 4
4	29.89	29.79	29.833	75.0	3 P	58.0	6 A	66.5	63.8	60.5	3.2
5	30.03	29.87	29.982	82.0	3 P	55 5	6:30 A	68.7	67.4	61.5	9 6
6	30.12	30.02	30.078	76.0	3 P	55.5	6:30 A	65.7	67.1	62.7	7.3
7	30.05	29.91	30.001	63.0	0 A	58.5	8 P	60.7	59.5	59.3	0.0
8	30.03	29.82	29.913	78.5	3 P	54.0	5:30 A	66.2	62.7	56.0	7.6
9	30.15	30.03	30.115	70.0	4:30 P	42.0	7 A	56.0	57.7	55.3	6.8
10	30.07	29.92	30.008	84.5	3 P	58.0	3 A	71.2	71.7	70.5	7.8
11	30.02	29.95	30.007	86.0	4 P	69 0	7:30 A	77.5	75.7	73.5	3.8
12	30.02	29.91	29.968	81.0	3 P	70.0	12 P	75.5	75.0	71.0	3.3
13	29.96	29.81	29.886	85.5	3 P	69 0	1 A	77.2	74.9	71.7	4 2
14	30.11	29.81	30.014	81 0	3 P	62.0	12 P	71.5	71.3	62.5	8.3
15	30.16	30.08	30.145	68.0	5 P	56.0	6 A	62.0	61.1	58.0	2.0
16	30.08	29.95	29.992	58.0	5 P	54 0	7 A	56.0	56.0	55.5	0.0
17	30.02	29.96	29.999	67.0	3 P	55.0	0 A	61.0	59.4	57.3	2 0
18	30.00	29.79	29 884	76 0	5 P	50.5	7 A	63.2	64.2	92.0	8.9
19	30.09	29.80	30.040	73.0	5 P	54.0	12 P	63.5	63.3	55.7	10.4
20	30.08	29 65	29.913	69.0	1 P	44 0	7 A	56.5	60.2	58.0	2.9
21	29.96	29.64	29.748	73.5	12 M	51 0	12 P	62.2	65.5	60.0	9 8
22	30.18	20.96	30.129	59.0	2 P	36 0	12 P	47.5	47.3	39.7	7 4
23	30.19	29.95	30.100	63.0	5 P	29 0	7 A	46.0	45.5	39.2	8.4
24	29.95	29.71	29.809	72.0	4 P	38 5	7 A	55.2	55.1	47.0	4.7
25	30 41	29.90	30.223	59.0	4 P	34 0	12 P	46.5	48 4	38.2	10.2
26	30.59	29.85	30 529	66.0	4 P	26.0	6:30 A	46 0	46.0	38.5	10.3
27	30.49	30.11	30.357	67.0	2 P	41.0	7 A	54.0	58.0	56 7	2.5
28	30.16	30.08	30.086	75.5	2 P	58.0	12 P	66.7	66.3	62.5	2.7
29	30.33	30.16	30.290	65.0	3 P	41.0	12 P	53 0	54.3	48 3	5.3
30	30.41	30.33	30.394	58.0	3 P	34.0	12 P	46.0	45.9	42.3	10.8

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	58.5	.581	84.5	W.	86	2.5	22	3 P				
2	56.0	.545	83.5	S.S.E.	61	1.5	17	3 P				
3	56.5	.493	95.5	N.N.E.	36	0.0	—		3 A	12 P	.05	
4	60.0	.549	94.5	N.N.E.	58	0.0	—		0 A	2 P	.54	
5	59.0	.615	82.5	N.N.E.	118	1.0	14	11 A				
6	60.0	.656	80.5	S S.W.	52	0.0	—		9 P	12 P	.34	
7	59.0	.505	100.0	S.E	88	0.0	—		0 A	12 P	1.23	
8	53.5	.490	86.0	N.N.E.	96	0.5	10	12 P	0 A	8 A	.02	
9	53.0	.497	84.5	S.W.	71	1.5	17	6 A				
10	68.5	.827	86.0	S.S.W.	175	3.5	26	8 P				
11	72.5	.871	93.0	S.S.W.	103	3.5	26	2 A				
12	69 5	.838	86 5	S.S.W.	185	4.5	30	3 P	10 P	12 P	05	
13	71.0	.822	93.0	S.	137	4.5	30	4 P	9:30 P	12 P	.08	
14	59.0	.691	72.0	N.	153	1.0	14	4 P	0 A	8 A	.10	
15	57.0	.498	90.5	E.	80	0.0	—		5:30 P	12 P	.10	
16	54.5	.448	97.0	N.N.E.	53	0.0	—		0 A	12 P	.48	
17	56.5	.478	97.0	N.N.E.	60	0.0	—		0 A	8 P	.01	
18	61.0	.603	89.5	S.	54	0.0	—					
19	51.5	.544	71 5	N.N.E.	167	2.5	22	2 P				
20	56.5	.539	86.0	S.S.W.	164	4.5	30	5 P				
21	60 0	.565	91.5	N.W.	233	5.0	32	5 P				
22	35.0	.283	74.5	N.	130	1.5	17	3 P				
23	37 5	.262	88.0	S.	85	1.5	17	2 P				
24	43.5	.369	82.5	S.S.W.	117	3.0	24	2 P	7 P		T	
25	27.5	.304	52.0	N.N.E.	188	3.0	24	1 A				
26	34.5	.283	76.5	S.S.W.	65	0.5	10	4 P				
27	51.0	.564	68.5	S.	150	3.0	24	6 P	10 P	12 P	.07	
28	59 0	.672	75.5	N.W.	157	2.0	20	0 A	0 A	2 A	.02	
29	45.5	.372	83.5	N.	105	1.5	17	4 P				
30	37.5	.312	71.5	N.N.E.	128	2.0	20	11 A				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was practically devoid of unusual features and presented but little that calls for comment. Perhaps the large amount of cloudiness and the few clear days was as noticeable as any single feature. The relative humidity was high and the absence of any high wind noticeable. The first frost of the season was a little later than usual and rather heavy for a first frost. Nearly all the precipitation occurred during the first half of the month.

The maximum and minimum barometers were both higher than their respective normals and the mean pressure was slightly lower than usual. The range of pressure was a little greater than usual.

The mean temperature was practically normal and the minimum temperature nearly six degrees lower than usual giving a large range for the month. Several days of rather low temperature were recorded during the last third of the month.

The mean relative humidity was about five per cent higher than the normal. The total precipitation was about one inch less than the normal and over one half of it occurred during the heavy storm of the 6th and 7th.

The total wind movement was practically normal; as to direction about one half of the time it was either from the South Southwest or the directly opposite North Northeast. There were a number of days when no pressure was registered on the pressure chart, and not a single gale was noted.

The amount of cloudiness was considerably more than usual.

J. E. OSTRANDER, Meteorologist

JAMES BOWER JR. Observer.

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BULLETIN No. 442. OCTOBER 1925

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.22, 30th, 9 A.
Minimum reduced to freezing,	28.80, 25th, 3 P.
Reduced maximum reading,	30.53, 30th, 9 A.
Reduced minimum reading,	29.10, 25th, 3 P.
Mean semi-daily reduced	29.975
Monthly range	1.43

Air Temperature. In Degrees Fahr.

Highest	73.0, 17th, 0 30 P.
Lowest	20.5, 31st, 7 A.
Mean hourly	43.2
Mean of means of max. and min.	43.5
Mean sensible (wet bulb)	39.8
Monthly range	53.5
Highest mean daily	56.5, 17th
Lowest mean daily	29.7, 30th
Mean maximum	53.6
Mean minimum	33.4
Mean daily range	20 2
Greatest daily range	37.5, 1st
Least daily range	6.5, 9th

Humidity.

Mean dew point	36.3
Mean force of vapor	.285
Mean relative humidity	80.0

Precipitation. In inches.

Total precipitation, in inches	4 74
Total snow, in inches,	trace
Number of days on which .01 inch or more rain fell	14

Wind.

Total movement	4231 m
Greatest daily movement	426m, 26th
Least daily movement	39m, 9th, 30th
Mean daily movement	136 m
Mean hourly velocity	5.7m

Maximum pressure per square foot, 22.0 lbs = 66m per hour, 25th, 10 P., W.

Maximum velocity for 5 minutes, 42m per hour, 25th, 10 P., W.

Prevailing direction, West Southwest.

Summary.

Southwest,	19 per cent
South	16 " "
Northwest	13 " "
West	13 " "
South Southeast	10 " "
Other directions	29 " "

Weather.

Mean cloudiness observed	53 per cent
Total cloudiness recorded by the Sun Thermometer	213 hours = 62 per cent
Number of clear days	5
Number of fair days	11
Number of cloudy days	15

Bright Sunshine.

Number hours recorded, 128 = 38 per cent.

Rain, 2d, 3d, 5th, 9th, 10th, 14th, 15th, 16th, 17th, 19th, 23rd, 24th, 25th, 28th, 29th, 30th.

Snow, 10th, 30th.

Frosts, 6th, 14th, 22d, 24th, 27th, 28th, 30th, 31st.

Gales. 53m, 10th, N. W.; 47m, 17th, N. W.; 36m, 20th, N. W.; 66m, 25th, W.; 55m, 26th, N. W.; 37m, 29th, N. W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.47	30.33	30.410	64.5	5 P	27.0	7 A	45.7	44.6	38.0	9.8
2	30.40	30.20	30.333	56.5	7 P	32 5	4 A	44.5	46.7	45.2	0 0
3	30.13	29.80	29.914	64.0	3:30 P	52.0	7 A	58.0	56.0	55.7	0 3
4	29.80	29.56	29.701	59.0	11 A	43.0	7 A	51.0	52.3	52.0	5.0
5	29.80	29.54	29.671	51 5	3 P	39 0	12 P	45.2	46.5	46.0	0 0
6	29.94	29.78	29.886	60.5	3:30 P	32.0	6 A	46 2	46.7	43.5	10.0
7	30 11	29.75	29 982	60.0	3 P	39.0	0 A	49.5	49.6	42.7	9 3
8	30.16	30.01	30.098	63.0	2:30 P	37.0	7 A	50 0	48.6	44 5	7.6
9	30.01	29.55	29.783	50.5	2 P	44.0	7 A	47.2	46 2	45.5	0.0
10	29.83	29.45	29.540	44 0	0 A	32.0	12 M	38 0	35.0	31.5	0.0
11	30.06	29.83	30.054	51.0	3 P	30 0	6 A	40 5	39.4	38.0	7.6
12	30.05	29.89	29.937	55.5	2 P	40.0	6 A	47.7	48.6	47.0	1.3
13	30.14	29.93	30.081	56.0	3:30 P	31.0	12 P	43 5	44 8	39.7	9.0
14	30.22	29.86	30.087	59.5	2:30 P	23.5	7 A	41.5	42.7	37.2	7 3
15	29.86	29.60	29 716	67.0	3 P	46.0	7 A	56.5	54.0	47.2	6.1
16	29.98	29.81	29.937	69 5	4 P	33 5	7:30 A	51.5	51 5	44.2	8.4
17	29.85	29.42	29.608	73.0	0:30 P	42.0	12 P	57.5	56 5	54.5	1.4
18	30.12	29.85	30 080	53.0	3:30 P	34.0	12 P	43.5	42.9	39.3	4 7
19	30.04	29 59	29 769	53 0	3 P	29 0	4 A	41 0	41.0	39.0	0.0
20	29.89	29.64	29.786	47 0	2 P	31.0	12 P	39.0	39.5	36.0	1.6
21	29.89	29.78	29.840	49 0	1:30 P	29.0	12 P	39.0	36.9	33.7	2.3
22	29.87	29.72	29 816	47.5	4 P	26.5	7 P	37 0	35.6	32.5	0.5
23	30.13	29 78	59.997	47 0	3 P	30.0	12 P	38.5	37.5	32.7	6.4
24	30.20	29.92	30.103	51.0	3 P	28.0	2 A	39.5	39.7	34.5	5.5
25	29 92	29.10	29 939	50 5	8:30 P	36.0	6 A	43.3	41.6	42.0	0.3
26	29.89	29.40	29.876	52.5	3 P	38 0	12 P	45.3	45.3	40.7	6.1
27	30.18	29.87	30.002	43.0	3 P	28.5	7 A	35.7	35 5	32.3	1.0
28	30.22	29.79	30.045	44.0	8 P	27.0	5:30 A	35 5	35.6	35.0	0.7
29	30 37	29.82	30.248	41.0	3 P	28.0	12 P	34.5	33.5	28.3	7.0
30	30.53	30.37	30.499	34.5	2 P	26.0	12 P	30 3	29.7	28.5	0.0
31	30.52	30.45	30.494	43.5	4 P	20.5	7 A	32.0	29.8	25.7	9.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	29.5	.269	81.5	W.	39	0.0	—					
2	43 5	.335	87.5	S.	47	2.0	20	4 P	8 P	12 P	T	
3	55.0	.456	95.5	S.S.E.	44	0.0	—		0 A	5 P	.59	
4	51.0	.467	89 5	S.	63	1.0	14	10 P				
5	45.0	.319	93.0	N.N.E.	115	0.5	10	5 P	4 A	8 P	.55	
6	39.5	.325	75.5	S.W.	52	0.5	10	11 P				
7	37 5	.323	70.5	S.	212	4.5	30	10 P				
8	41.0	.332	77.5	S S.E.	36	0.0	—					
9	45.0	.311	96.5	N.E.	33	0.0	—		8 A	12 P	.55	
10	28.0	.199	78.5	N.W.	400	14.0	53	11 A	0 A	8 A	.15	T
11	36.0	.245	86.0	W.N.W.	323	4.5	30	10 A				
12	45 0	.348	86 5	S.W.	138	2.5	22	2 P				
13	34.5	.285	70.0	N.W.	143	2.0	20	3 P				
14	32.0	.283	68 5	S.S.E.	133	4.0	28	2 P	8 P	12 P	.45	
15	43.0	.374	77.0	W.	137	2.0	20	11 A	0 A	8 A	.07	
16	40.5	.346	76.0	S.	53	0.5	10	1 P	9 P	12 P	.28	
17	53.0	.454	88.0	N.W.	230	11.0	47	2 P	0 A	8 A	.06	
18	32.0	.283	63.0	W.	92	0.0	—					
19	36.0	.256	86.5	S.W.	56	2 5	22	7 P	1 P	8 P	.01	
20	30.5	.245	70.0	W.S.W.	290	6.5	36	11 A				
21	27 0	.227	65 5	S.W.	139	1.0	14	3 P				
22	28.0	.206	77.0	N.E.	51	0.0	—					
23	27 5	.207	72.5	S.W.	126	2.5	22	2 P	3 A	5 A	T	
24	37.0	.260	83.5	S.	103	2 0	20	6 P	6:30 P	12 P	.40	
25	39.5	.297	83.5	N.N.E.	172	22.0	66	10 P	0 A	4 P	1.55	
26	37.5	.277	80.5	N.N.W.	426	15 0	55	0 A				
27	28.0	.199	76 5	W.	84	2.5	22	12 M				
28	31.0	.228	78.5	S.W.	49	5.5	33	11 P	7:30 P	12 P	.03	
29	22.5	.171	72.5	N.W.	318	7.0	37	5 A	0 A	8 A	.04	
30	27.5	.161	94 5	E.	33	0.0	—	—	2 P	8 P	.01	T
31	22.0	.151	77.5	N.	94	0.5	10	1 P				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The outstanding feature of the weather during October was the unusually low temperature. This was most noticeable the last two weeks of the month when the temperature was such as might be expected a month later. The mean hourly temperature was the lowest for October since this station was established. The maximum and minimum records available here, dating back to 1836 show that it was the coldest October since 1888. The last two days of the month averaged below freezing.

Much cloudiness and a large precipitation added to the unpleasantness of the month.

The mean barometer was considerably below the normal and the range much larger than usual. The minimum pressure, on the 25th, was very low for the time of the year The total wind movement was slightly greater than usual owing to a few large daily records.

The mean hourly temperature was seven degrees below the normal, and the maximum and minimum records were both considerably lower than usual. Ice was formed on the pond the morning of the 31st.

The mean dew point was about five degrees lower than usual and the relative humidity was five per cent higher than the normal.

The total precipitation was about an inch more than the normal, in marked contrast with records for October, last year, when there was practically no rainfall. Traces of snow occurred on two dates—rather unusual for so early in the fall.

The amount of cloudiness was excessive and nearly half of the days were either cloudy or overcast.

J. E. OSTRANDER, Meteorologist

JAMES BOWER JR. Observer.

Massachusetts Agricultural College.
AMHERST, MASS.

BULLETIN No. 443. NOVEMBER 1925

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.36, 4th, 12 P.
Minimum reduced to freezing,	28.78, 13th, 10 A
Reduced maximum reading,	30.67, 4th, 12 P.
Reduced minimum reading,	29.08, 13th, 10 A.
Mean semi-daily reduced	30.086
Monthly range	1.59

Air Temperature. In Degrees Fahr.

Highest	62.0, 16th, 2.30 A.
Lowest	11.0, 30th, 7 A.
Mean hourly	37.4
Mean of means of max. and min.	38 0
Mean sensible (wet bulb)	33.7
Monthly range	51.0
Highest mean daily	53.2, 13th
Lowest mean daily	18.7, 30th
Mean maximum	47.3
Mean minimum	28.8
Mean daily range	18.5
Greatest daily range	36.5, 1st
Least daily range	4.5, 14th

Humidity.

Mean dew point	29.4
Mean force of vapor	.224
Mean relative humidity	77.8

Precipitation. In inches.

Total precipitation, in inches	3.23
Total snow, in inches,	T
Number of days on which .01 inch or more rain fell	9

Wind.

Total movement	5173m
Greatest daily movement	446m, 17th
Least daily movement	30m, 2d, 12th
Mean daily movement	172 m
Mean hourly velocity	7.2m

Maximum pressure per square foot, 20.5 lbs= 64m per hour, 16th, 1 A., S.

Maximum velocity for 5 minutes, 36m per hour, 16th, 2 A., S.

Prevailing direction, West.

Summary.

Northwest	23 per cent
South	20 " "
Southwest	13 " "
North Northwest,	10 " "
Other directions	33 " "

Weather.

Mean cloudiness observed	47 per cent
Total cloudiness recorded by the Sun Thermometer	171 hours = 57 per cent
Number of clear days	6
Number of fair days	11
Number of cloudy days	13

Bright Sunshine.

Number hours recorded, 127 = 43 per cent.

Rain, 6th, 7th, 8th, 12th, 13th, 14th. 15th, 16th, 27th.

Snow, 27th.

Frosts, before the 16th; 1st, 2d, 5th, 7th, 11th.

Gales, 40m, 8th, S. S. W.; 59m, 13th, E. S. E.; 45m, 14th, N. W.; 56m, 15th, S.; 64m, 16th, S.; 40m, 17th, N. W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.59	30.45	30.523	53.0	3:30 P	16.5	7:30 A	34.7	32.2	25.5	8.8
2	30.50	30.29	30.380	49.0	2:30 P	21 0	7 A	35.0	33.8	27.5	6 4
3	30.53	30.29	30.462	48.0	3 P	29.5	5:30 A	38.7	37.7	32.7	7 9
4	30.67	30.53	30.610	54.0	4 P	28.0	12 P	41.0	38.8	35.5	9.3
5	30 67	30.31	30.489	47.0	3 P	21.0	7 A	34.0	35.2	32.3	4 0
6	30.31	30.15	30.248	59.5	3:30 P	35.0	12 P	47.3	47.3	43.7	4.8
7	30.38	30.10	30 287	53.0	3 P	28 5	7 A	40.7	42.2	39.7	5.9
8	30.10	29.52	29.816	61.0	2:30 P	40.0	12 P	50.5	51 8	50.0	0.0
9	30.09	29.94	30.035	39.5	3 P	32.0	12 P	35.7	35.3	31.0	1.6
10	30.31	30.09	30.250	44.0	3 P	26.0	12 P	35 0	33.3	29.5	5.6
11	30.35	30.19	30.287	49.5	3 P	22.0	7:30 A	35 7	35.0	32.0	5.2
12	30.28	29.84	30.182	47.0	12 P	29 0	5 A	38 0	37 6	37.5	0.0
13	29.84	29.08	29.147	60.5	2 P	47.0	0 A	53.7	53.2	50.7	1.8
14	29.77	29.26	29.484	48.5	5 P	44.0	11 A	46.7	47.0	44.5	0.3
15	29.95	29.47	29.819	60.0	12 P	38.5	6 A	49.2	48.4	43.5	4 8
16	29.72	29.32	29.497	62.0	2:30 A	38 5	12 P	50.2	46 3	41.3	2 5
17	30.18	29.72	30.047	43 0	2 P	35.5	5 A	39.2	38.6	34.0	2 6
18	30.39	30.18	30 364	50.0	3 P	31 5	7:30 A	40.7	39 3	32.7	7.6
19	30.27	30.08	30.157	46.0	3 P	32.0	4 A	39.0	39.0	37.7	0.3
20	30.09	29.99	30.049	48 0	3 P	30.5	7:30 A	39.2	39 9	35.0	2.1
21	30.11	29.95	30.034	54.5	3 P	31 0	7:30 A	42.7	40.7	34.0	8.4
22	29.95	29.68	29.796	60.5	2:30 P	27.5	7:30 A	44 0	42.5	36.7	6.3
23	29.74	29.64	29.700	45.0	0 A	30.0	12 P	37.5	37.2	33.5	0 0
24	29.84	29.64	29.760	33.0	3 P	23.5	7:30 P	28.2	27.8	24.0	8.0
25	29.89	29.77	29 839	37.0	3:30 P	24.5	7:30 P	30.7	29.9	27.3	0.0
26	30.23	29.82	30.180	40.5	3:30 P	26 0	12 P	33.2	31.3	26.5	7.6
27	30.23	29.77	29.939	34.0	8 P	25.5	7:30 A	29.7	29.8	30.5	0.0
28	30.34	29.84	30.157	37 0	11 A	25.0	12 P	31.0	32.0	29.5	0.0
29	30 54	30.34	30.480	27.0	3 P	15.0	12 P	21.0	20 5	17.3	8.1
30	30.61	30.46	30.565	28.0	3 P	11.0	7 A	19.5	18.7	16.3	7.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	20.0	.154	72.5	S.S.W.	32	0.0	—					
2	22.0	.173	72.5	W.	30	0.0	—					
3	27.0	.212	69.0	E.N.E.	182	4.0	28	3 P				
4	28.5	.213	73.5	E.	122	0.0	—					
5	30.5	.205	86.0	S.S.W.	65	2.0	20	2 P				
6	41.0	.308	84.0	N.W.	136	1.5	17	4 P	0:30 A	8 A	.25	
7	35 5	.278	78.0	S.	62	1.5	17	6 P	9 P	12 P	.05	
8	48.0	.398	89 0	S.W.	325	8.0	40	10 A	9:30 A	6 P	.51	
9	25.5	.196	71.5	N.W.	248	4.0	28	1 A				
10	25.0	.178	74.5	W.	128	2.0	20	1 P				
11	27.0	.209	76.5	S.	86	2.5	22	2 P				
12	37.0	.228	98 0	N.W.	30	0.0	—		6:30 P	12 P	.30	
13	48.0	.406	83.5	S.W.	312	17.5	59	5 A	0 A	12 P	.49	
14	41.5	.326	79.5	N.W.	438	10.0	45	7 P	0 A	8 A	.02	
15	38.0	.337	69.0	S.	226	16.0	56	12 P	11 P	12 P	.02	
16	36.0	.297	74.5	W.S.W.	355	20.5	64	1 A	0 A	11 A	.86	
17	27 5	.227	66.0	N.W.	446	8.0	40	7 P				
18	27 0	.212	70.5	N.W.	165	2.0	20	10 A				
19	36.0	.245	90.0	S.	150	3.0	24	10 A				
20	30.0	.230	75.5	S.W.	161	2.5	22	4 P				
21	28 5	.225	70.0	S.W.	92	0.0	—	—				
22	33.5	.247	79.5	S.	126	4.0	28	4 P				
23	29.0	.217	73 5	N.N.W.	197	3 0	24	4 P				
24	19.5	.140	77.0	N.W.	312	5.0	32	2 P				
25	22.5	.160	80.0	S.	123	0.5	10	4 P				
26	21.5	.158	75.5	N.	131	2.5	22	1 A				
27	26.5	.174	84 0	N N.W.	48	0.0	—	—	0 A	12 P	.73	*
28	26.0	.178	79.5	W.N.W	171	4.5	30	4 P				
29	14.0	.102	85.0	N.N.W.	226	4.5	30	9 A				
30	12.0	.101	75.5	N.	48	0.0	—					

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The abnormally cold weather which was so marked during October did not continue in November and the temperature of the month was much more seasonable. Marked barometric activity with much high wind and heavy gales, together with considerable precipitation, occurred near the middle of the month and were the most noticeable features of the month. The temperature until near the close of the month was slightly higher than normal. On the whole the month was not far from normal.

The mean barometer was considerably higher than normal, notwithstanding some very low readings, and the range of pressure was very large. The rapid fall in pressure on the 12th—13th was especially noticeable. Immediately following this drop in pressuro heavy winds occurred which made up about one-third of the total wind movement for the month in a period of five days. Some of the heavy gales were from the South and Southeast—an unusual direction for this localty. While there was considerable wind from the northwest quadrant the prevailing direction was West.

The mean temperature was nearly normal, and after a rather low reading on the 1st there was very little low temperature until near the end of the month. The maximum temperature was about two degrees lower than usual and occurred near the middle of the night.

The mean dew-point was practically normal and the relative humidity slightly higher than usual.

The total precipitation was practically normal and a light snow occurred near the end of the month.

The amount of sunshine was nearly normal.

J. E. OSTRANDER, Meteorologist

JAMES BOWER JR. Observer.

AMHERST, MASS.
Massachusetts Agricultural College
AMHERST, MASS.

BULLETIN No. 444. DECEMBER 1925

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.15, 1st, 0 A.
Minimum reduced to freezing,	29.05, 12th, 7 A 13th 2 A
Reduced maximum reading,	30.47, 1st, 0 A.
Reduced minimum reading,	29.36, 12th, 7 A. 13th 2 A
Mean semi-daily reduced	29.899
Monthly range	1.11

Air Temperature. In Degrees Fahr.

Highest	56.5, 6th, 4 30 A.
Lowest	1.5, 27th, 7 A.: 30th, 7 A
Mean hourly	28.7
Mean of means of max. and min.	29.0
Mean sensible (wet bulb)	26.1
Monthly range	55.0
Highest mean daily	45.8, 6th
Lowest mean daily	6.0, 27th
Mean maximum	35.4
Mean minimum	22.6
Mean daily range	12.8
Greatest daily range	28.0, 30th
Least daily range	5.0, 21st

Humidity.

Mean dew point	22.2
Mean force of vapor	.163
Mean relative humidity	79.9

Precipitation. In inches.

Total precipitation, in inches	3.56
Total snow, in inches	6¾
Number of days on which .01 inch or more rain fell	11
Days of sleighing,	2

Wind.

Total movement	6694m
Greatest daily movement	441m, 9th
Least daily movement	81m, 16th
Mean daily movement	216 m
Mean hourly velocity	9.0m

Maximum pressure per square foot, 14.0 lbs= 53m per hour, 9th, 10 A., W.

Maximum velocity for 5 minutes, 36m per hour, 9th, 10 A., W.

Prevailing direction, West Northwest.

Summary.

Northwest	19 per cent
West	19 " "
Southwest	13 " "
West Northwest	10 " "
South Southwest	10 " "
North	10 " "
North Northeast,	10 " "
Other directions	9 " "

Weather.

Mean cloudiness observed	56 per cent
Total cloudiness recorded by the Sun Thermometer	162 hours = 57 per cent
Number of clear days	4
Number of fair days	13
Number of cloudy days	14

Bright Sunshine.

Number hours recorded. 121 = 43 per cent.

Rain, 3d, 4th, 5th, 6th, 8th, 11th, 12th, 20th. 21st, 22d.

Snow, 1st, 22d, 24th, 25th.

Gales, 53m, 9th, W.; 36m, 10th, W. N. W.; 40m, 12th, N. W.; 38m, 13th, N. W.; 43m, 14th, N. W.; 36m, 17th, N. W. 39m, 23d, N. W.; 36m, 26th, N. W.; 42m, 27th, N. W.; 37m. 28th, N. N.W.; 30m, 29th, N. W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.47	30.30	30.364	30.5	12 P	21 0	0 A	25.7	26.5	27.3	0 0
2	30.41	30.30	30.358	40 0	3 P	30 5	0 A	35.3	34.7	33 5	0.0
3	30.30	29.97	30.057	43.0	12 P	35.5	7 A	39.3	38.5	38.3	0.0
4	30.04	29.97	30.004	47.0	3 P	41.0	12 P	44.0	43.8	41.5	0.0
5	30.03	29.78	29.928	45.0	3 P	39.0	6 A	42.0	41.1	40.3	0.0
6	29.87	29.73	29.822	56.5	4:30 A	37.0	12 P	46.7	45.8	41.5	5.1
7	29.93	29.79	29.896	45.0	1 P	33.5	9 A	39.3	38.3	34.0	3.4
8	29.97	29.53	29.790	37.5	12 P	34.0	6:30 P	35.7	36 0	33.5	0.0
9	29.66	29.46	29.605	42.0	4 A	19.0	12 P	30.5	28.4	22 5	7.2
10	29.73	29.58	29 655	29.0	12 M	17.0	3 A	23 0	22.3	20.5	5 0
11	29.85	29.54	29.729	37.0	3:30 P	20.0	1 A	28 5	29.1	21.7	4.5
12	29.57	29.36	29.460	40.5	12 M	33.0	0 A	36.7	36.5	35 3	1.7
13	29 72	29.36	29 677	38.0	3:30 A	28 0	12 P	33 0	31.0	26.7	6.0
14	29.95	29.69	29.841	32.0	4 A	21.0	12 P	26.5	27 2	25.3	5.5
15	30.04	29.88	30.007	26 0	3 P	15 0	8 A	20.5	20.0	15.7	7 9
16	29.88	29.58	29 786	36.0	3 P	16.5	0 A	26.3	24.8	23.0	7 0
17	29 72	29 61	29.690	34 0	3:30 P	25.0	12 P	29.5	28 0	26 7	3 0
18	29.81	29.68	29.758	33.0	3 P	24 5	1 A	28 7	29 6	28.3	2.5
19	29.94	29.81	29.934	39.0	2 P	23 5	7 A	31.3	31 0	26.3	4.5
20	30.06	29.92	30.062	42 5	1:30 P	23.0	7 A	32.7	32.1	29.7	3.7
21	29.96	29.89	29 940	39.0	3:30 P	34 0	7 A	36.5	36 0	35.3	1.4
22	29.89	29.58	29 700	41.0	2:30 P	29.0	12 P	35.0	37.7	36 7	0.4
23	30.10	29.58	29.989	29.0	0 A	16.0	10 A	22.5	21.0	15.7	7.0
24	30.13	29.98	30.058	32 0	4 P	18.5	0 A	25.3	25.2	23 5	3.2
25	30.00	29.50	29.700	31.0	3 P	21.0	12 P	26 0	27 0	26.5	0.0
26	29 70	29 54	29.668	17.0	1:30 P	3 0	12 P	10.0	12.1	6.7	7.9
27	29.76	29 70	29.724	15.0	12 P	1.5	7 A	8.2	6.0	5.7	7.0
28	30.09	29.71	30.026	29 5	4:30 P	12.0	5:30 A	20.7	19.4	17.0	8.2
29	30 24	30.09	30.198	29 0	2:30 P	13.5	4:30 A	21.3	21.2	18.2	7.0
30	30.36	30.22	30.304	29.5	3 P	1.5	7 A	15.5	16 1	11.3	8.0
31	30.22	30.08	30.145	31.0	12 P	13.0	6:30 A	22.0	23.5	20.3	4.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	25.5	.153	94.5	N.	97	0.0	—		3:30 A	12 P	.70	5½
2	30 0	.204	84.0	N.	135	1.5	17	11 P				
3	37.5	.236	93.5	N.	221	2.5	22	2 A	3 A	12 P	1.09	
4	39.5	.284	85.0	N.N.E.	187	1.0	14	1 A	9 A	5 P	.13	
5	38.5	.261	90.0	N N.E.	149	0.5	10	2 A	8 A	12 P	.10	
6	38 5	.287	80.5	S.S.W.	160	3.0	24	2 P	0 A	4 A	.41	
7	29.5	.221	74.0	S.W.	176	2.0	20	11 A				
8	29.5	.208	77 5	S.S.W.	190	3.0	24	9 A	8:30 P	12 P	.06	
9	16.0	.138	68.0	W.	441	14.0	53	10 A				
10	15.5	.120	73.5	W.	256	6.5	36	10 A				
11	23.0	.157	80.5	S.W.	324	2.5	22	11 A	11:30 P	12 P	T	
12	32.5	.220	84.5	W.	246	8.0	40	4 P	0 A	8 A	.03	
13	22.0	.159	75 5	W.N.W.	340	7.0	38	5 A				
14	20.5	.150	76.5	N.W.	349	9.0	43	10 A				
15	11.0	.098	77.0	N.W.	243	4.5	30	10 A				
16	20.5	.121	90.0	W.	81	2.5	22	2 P				
17	24.0	.150	86.0	W.	271	6.5	36	3 P				
18	23.0	.173	72.0	W.N.W.	351	4.5	30	8 P				
19	20 0	.159	72.5	S.W.	182	1.5	17	2 A				
20	29 0	.171	92.0	N.N.E.	83	0.0	—		4:30 P	12 P	.35	
21	34.5	.212	91.0	W.	112	1.5	17	11 P	0 A	12 P	.57	
22	35.5	.224	95.5	E.	104	3.5	26	11 P	0 A	11 P	.05	T
23	8 5	.101	66 5	N.W.	382	7.5	39	12 M				
24	21.5	.133	87.5	S.W.	142	2.0	20	12 M	6 A	7:30 A	T	T
25	23.5	.154	83.5	S.S.W.	108	4.0	28	12 P	4 A	8 P	.07	1¼
26	−5.5	.067	57.0	N.W.	306	6.5	36	4 P				
27	3.0	.061	85.0	N.W.	282	9.0	42	7 A				
28	6.5	.102	59.0	N.N.W.	330	7.0	37	1 A				
29	13.0	.111	74.0	N.N.W.	234	6.5	36	12 M				
30	4.5	.083	70.5	N.W.	99	1.0	14	2 A				
31	16.5	.120	80.5	W.N.W.	113	2.0	20	3 P				

**Rain or melted snow at base of tower. * Included in following day.

Annual Summary for 1925.

Pressure. In inches.

Maximum reduced to freezing, ... 30.43, Jan. 1st, 8 A.
Minimum reduced to freezing, ... 28.78. Nov. 13th, 10 A.
Maximum reduced to freezing and sea-level, ... 30.76, Jan. 1st, 8 A.
Minimum reduced to freezing and sea-level, ... 29.08, Nov. 13th, 10 A.
Mean semi-daily reduced to freezing and sea-level, ... 30.022
Annual range, ... 1.68

***Air Temperature.** In degrees Fahr.

Highest, ... 97.0, June 7th, 4:00 P.
Lowest, ... -13.0, Jan. 29th, 4:00 A.
Mean hourly, ... 47.6
Mean of means of max. and min., ... 47.6
Mean sensible (wet bulb), ... 43.4
Annual range, ... 110.0
Highest mean daily, ... 86.1, June 6th.
Lowest mean daily, ... -0.1, Jan. 24th.
Mean maximum, ... 58.0
Mean minimum, ... 37.2
Mean daily range, ... 20.8
Greatest daily range, ... 46.5. Mar. 26th.
Least daily range, ... 4.0, Sept. 16th.

Humidity.

Mean dew point, ... 40.1
Mean force of vapor, ...380
Mean relative humidity, ... 80.5

Wind.

Prevailing direction, ... West

Summary.

South . . . . . 15 per cent
South Southwest . . . . . 13 " "
North . . . . . 11 " "
North Northeast . . . . . 10 " "
Southwest . . . . . 10 " "
West . . . . . 10 " "
Northwest . . . . . 10 " "
Other directions, ... 21 " "
Total movement, ... 53,311 m
Greatest daily movement, ... 682m., Feb. 27th
Least daily movement, ... 18 m., Feb. 8th
Mean daily movement, ... 146 m
Mean hourly velocity, ... 6.1 m
Maximum pressure per square foot, 22.0 lbs., = 66 m. per hour, Oct. 25th. 10 P., W.
Maximum velocity for 5 minutes, 42 m. per hour, Oct. 25th, 10 P., W.

Precipitation. In inches.

Total precipitation, rain or melted snow, . 44.63
Snow total in inches, ... 34.5
Number of days on which .01 or more rain or melted snow fell, ... 130

Weather.

Mean cloudiness observed, ... 49 per cent.
Total cloudiness recorded by Sun Thermometer, ... 2100 hrs. = 47 per cent.
Number of clear days, ... 98
Number of fair days, ... 141
Number of cloudy days, ... 126

Bright Sunshine.

Number of hours recorded, 2361 hrs. = 53 per cent

Dates of Frosts.

Last, ... May 26th
First, ... Sept. 23rd

Dates of Snow.

Last, ... April 20th
First, ... Oct. 10th
Total days of sleighing, ... 36

Gales of 50 or More Miles Per Hour.

Jan. 22d, 52m, N.N.W.
Feb. 26th, 53m, W.N.W.; 27th, 53m, W.N.W.
June 1st, 51m, N.N.W.
Oct. 10th, 53m, N.W.; 25th, 66m, W.; 26th, 55m, N.W.
Nov. 13th, 59m, E.S.E.; 15th, 56m, S.; 16th, 64m, S.
Dec. 9th. 53m, W.

Temperature in ground shelter.

JAMES BOWER Jr.
Observer.

J. E. OSTRANDER,
Meteorologist.

Massachusetts Agric.
AMHERST, Mass.

BULLETIN No. 445. JANUARY 1926

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.21, 8th, 11 A
Minimum reduced to freezing,	29.00, 19th, 2 A
Reduced maximum reading,	30.53, 8th, 11 A.
Reduced minimum reading,	29.31, 19th, 2 A.
Mean semi-daily reduced	29.993
Monthly range	1.22

Air Temperature. In Degrees Fahr.

Highest	48.0, 19th, 12 M.
Lowest	0.0, 11th, 7 A.
Mean hourly	25.9
Mean of means of max. and min.	25.5
Mean sensible (wet bulb)	22.8
Monthly range	48.0
Highest mean daily	4.09, 19th
Lowest mean daily	7.9, 29th
Mean maximum	33.7
Mean minimum	17.4
Mean daily range	16.3
Greatest daily range	32.5, 15th
Least daily range	5.0, 5th

Humidity.

Mean dew point	18.6
Mean force of vapor	.141
Mean relative humidity	79.4

Precipitation. In inches.

Total precipitation, in inches	3.23
Total snow, in inches,	8½
Number of days on which .01 inch or more rain fell	10
Days of sleighing,	11

Wind.

Total movement	4993m
Greatest daily movement	425m, 7th
Least daily movement	28m, 4th
Mean daily movement	161 m
Mean hourly velocity	6.7m

Maximum pressure per square foot, 17.0 lbs = 58m per hour, 29th, 1 A., W.N.W.

Maximum velocity for 5 minutes, 42m per hour, 29th, 1 A., W.N.W.

Prevailing direction, West Southwest.

Summary.

South	26 per cent
Northwest	22 " "
Southwest	19 " "
North	10 " "
West	10 " "
Other directions	13 " "

Weather.

Mean cloudiness observed	55 per cent
Total cloudiness recorded by the Sun Thermometer	151 hours = 51 per cent
Number of clear days	4
Number of fair days	18
Number of cloudy days	9

Bright Sunshine.

Number hours recorded. 146 = 49 per cent.

Rain, 4th, 5th, 6th, 18th, 19th, 21st, 22d, 31st.

Snow, 4th, 9th, 22d, 26th, 27th 28th.

Sleet, 31st.

Gales, 36m, 6th, N. W.; 47m. 7th, N. W.; 45m, 9th, N. N. E.; 57m. 22d.; N. W. 44m, 24th, W. N. W.; 51m, 28th, W. N. W.; 58m, 29th, W. N. W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.14	29.75	29.937	37.0	12 P	30.0	6 A	33.5	32.8	29.0	3 2
2	30.07	29.76	30.026	37.0	0 A	30.5	7:30 A	33.7	33.8	29.5	0.0
3	30.41	30.07	30.301	44.0	3:30 P	25.0	12 P	34.5	34.9	30.3	7.0
4	30.40	30.05	30.199	31.0	12 P	24.0	3 A	27.5	26.0	27.3	0 0
5	30 05	29 71	29.888	36.0	12 P	31.0	0 A	33.5	32.8	33.3	0.0
6	29.71	29.50	29.609	42.5	3 P	36.0	0 A	39.2	38.4	35.0	0.0
7	30.37	29.69	30.098	36.0	0 A	16.0	12 P	26 0	27.3	20.0	7.6
8	30.53	30.37	30.453	30.0	3 P	11.5	7:30 A	20.7	18 9	16.0	6.1
9	30.37	29.73	29.925	22.5	4 P	10.0	12 P	16.2	18.8	19.0	1.2
10	30.10	29.91	30.049	30.0	2 P	8.0	2 A	19.0	19.3	16.0	5 6
11	30.04	29.94	29.989	27.0	12 P	0 0	7 A	13.5	15.8	12.0	6.1
12	29.91	29.78	29 837	34.0	12 M	11.0	12 P	22.5	25.3	21.3	5.5
13	30.05	29 90	29.994	27.0	2 P	0.5	7 A	13.7	15.0	9.2	7.3
14	30.01	29.70	29.886	25.0	3 P	8.0	5 A	16.5	16 3	15.3	6.2
15	29.90	29.61	29 693	39 5	4 P	7 0	2:30 A	23.2	24.2	21.7	5 1
16	30.33	29.90	30.288	39.0	3 P	19.5	7 A	29.2	28 8	22.5	8 3
17	30.30	30.11	30.173	40 5	4 P	24.0	2 A	32.3	32.9	30 7	7.5
18	30.11	29.33	29.773	39.0	10 P	30.0	7 A	34.5	33.4	32.5	0.0
19	30.09	29.31	29 795	48.0	12 M	32 0	12 P	40.0	40 9	36.0	7.8
20	30.09	29.94	30.031	40 0	2:30 P	26.5	7 A	33.2	32.7	29.3	4.8
21	30.04	29.58	29.787	40.0	5 P	34 0	4 A	37.0	36 7	36.0	0.0
22	30.07	29.50	29.796	35.0	0 A	11.0	8:30 P	23 0	19.2	14.7	6.0
23	30.19	29.91	30.113	27.0	3 P	15.0	0 A	21.0	21.5	18.0	7.3
24	32.22	29.72	29.929	28.0	11 A	16.0	12 P	22.0	22.8	20 3	6 0
25	30.37	30.21	30 313	23.0	3 P	5.5	7:30 A	14 3	16 2	13.0	6 5
26	30.25	29.76	30.098	29.5	3 P	6 0	8:30 A	17.7	20.4	16.7	5.4
27	29.76	29.49	29.596	35.5	3 P	21.0	12 P	28.3	27.4	23.0	4.5
28	29.90	29.34	29.550	23 0	9 P	7.0	12 P	15.0	15.3	12.7	5.3
29	30.38	29.90	30.329	14.0	12 P	1.0	8:30 A	7.5	7 9	5.3	8.7
30	30.22	30.04	30.151	42.0	3 P	13.0	0 A	27.5	32 0	30.5	6.6
31	30.16	29.99	30.081	42.0	3 P	28.0	7 A	35.0	33.8	30.5	0.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	24.0	.173	74.5	S.S.W.	190	4.5	30	11 P				
2	24 0	.180	72.5	W.	228	5.5	33	5 A				
3	26.0	.183	77.0	N.W.	123	2.0	20	1 P				
4	25.5	.153	91.5	S.W.	28	0.0	—		8 A	2 P	.08	
5	31.5	.194	92.5	S.	30	0.0	—		8 A	12 P	.05	
6	27.5	.234	69.5	S.	144	6.5	36	10 P	0 A	9 A	.04	
7	6.0	.137	43.0	N.W.	425	11.0	47	12 M				
8	11.5	.100	77 5	N.	116	1.0	14	3 P				
9	16.0	.110	86.0	N.N.E.	232	10.0	45	1 P	4 A	3 P	.37	4¼
10	10.0	.101	69.5	S.	81	1.0	14	11 A				
11	7.0	.097	77.0	S	38	0.0	—					
12	14.0	.128	67.5	W.S.W.	168	1.0	14	1 P				
13	5.0	.077	76 5	S.W.	56	0.0	—					
14	12.0	.095	83.5	N.W.	113	1.0	14	11 A				
15	18.0	.130	81.0	S.S.W.	74	3.5	26	11 P				
16	18.0	.133	75.0	S.W.	167	5.5	33	1 A				
17	26.5	.185	77.5	S.	130	1.5	17	5 P				
18	32.5	.185	100.0	S.E.	56	0.0	—		5 A	12 P	1.40	
19	30 5	.245	71.0	N.	216	5.0	32	7 A	0 A	7 A	.22	
20	26 5	.172	84.5	S.	49	0.0	—					
21	35.0	.217	95.5	S.	49	0.0	—		2 P	12 P	T	
22	12.0	.095	84.5	N.	317	16.5	57	3 P	0 A	8 A	.48	2½
23	12.5	.109	74 0	S.W.	287	4 5	30	11 A				
24	13 5	.116	72.5	W.	357	9.5	44	2 P				
25	8.0	.090	75.5	N.W.	61	0.5	10	1 A				
26	14.5	.108	87.5	S.W.	39	1.0	14	3 P	8 P	12 P	.10	¾
27	20.5	.136	82.0	W.	120	3 0	24	6 P	5 P	1:30 P	T	T
28	10.0	.080	85.0	N.W.	352	13.0	51	7 P	3 A	9 A	.10	¾
29	3.5	.060	82.0	N.W.	423	17.0	58	1 A				
30	27.0	.186	80 0	S.	208	3.5	26	12 M				
31	28.0	.172	94.5	N.W.	116	3.0	24	10 P	3 P	12 P	.39	T

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather for January was like that of the preceding month in several respects. The snowfall was rather light, and the temperature slightly above normal. There was but little sleighing and not much bitter cold.

The wind movement was considerably less than in December, but the gales were somewhat heavier, if not so frequent. There was also much more wind from the South. Altogether the month was less disagreeable than usual at this time of year.

The several weather elements showed the following features of more or less interest: The mean barometer was below the normal and the range of pressure rather small for the time of year. The maximum pressure was nearly two-tenths of an inch lower than usual and the duration of really high pressure was rather short.

The mean temperature was about a degree above the normal and the maximum temperature was slightly lower than usual. The minimum temperature was zero which was seven degrees above the normal for this record. Near zero records were made on several days.

The mean dew-point and relative humidity were both slightly above the normal.

The total snow fall was rather small and nearly one-half of it occurred during the storm of the 9th. There was fair sleighing for about a week after this storm before the snow melted. There were a few days of sleighing also near the last of the month. On the 18th there was a very heavy rain storm when about one-half of the total precipation for the month was registered.

The total wind movement was practically normal. Gales were rather frequent and several were of marked intensity. There was considerable south wind for this time of year.

The amount of sunshine was slightly greater than usual.

J. E. OSTRANDER, Meteorologist

JAMES BOWER JR. Observer.

BULLETIN No. 446. FEBRUARY 1926

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.07, 3d, 8 A.
Minimum reduced to freezing,	28.89, 19th, 3 P.
Reduced maximum reading,	30.40, 3d, 8 A.
Reduced minimum reading,	29.20, 19th, 3 P.
Mean semi-daily reduced	29.874
Monthly range	1.20

Air Temperature. In Degrees Fahr.

Highest	43.0, 25th, 7 P.
Lowest	-7.0, 9th, 7 A.
Mean hourly	23.1
Mean of means of max. and min.	22.6
Mean sensible (wet bulb)	20.1
Monthly range	50.0
Highest mean daily	35.7, 15th
Lowest mean daily	7.7, 9th
Mean maximum	31.7
Mean minimum	13.5
Mean daily range	18.2
Greatest daily range	35.5, 24th
Least daily range	4.0, 22d

Humidity.

Mean dew point	15.3
Mean force of vapor	78.1
Mean relative humidity	.124

Precipitation. In inches.

Total precipitation, in inches	5.01
Total snow, in inches,	32¾
Number of days on which .01 inch or more rain fell	11
Days of sleighing,	28

Wind.

Total movement	5273m
Greatest daily movement	415m, 4th
Least daily movement	24m, 13th
Mean daily movement	188 m
Mean hourly velocity	7.8m

Maximum pressure per square foot, 12.0 lbs = 49m per hour, 4th, 12 M., N.

Maximum velocity for 5 minutes, 30m per hour, 4th, 1 P., N.

Prevailing direction, Northwest.

Summary.

Northwest	21 per cent.
North	18 " "
West	14 " "
North Northwest	11 " "
Other directions	36 " "

Weather.

Mean cloudiness observed	49 per cent
Total cloudiness recorded by the Sun Thermometer	148 hours = 50 per cent
Number of clear days	10
Number of fair days	7
Number of cloudy days	11

Bright Sunshine.

Number hours recorded. 148 = 50 per cent.

Rain, 1st, 18th, 19th, 25th.

Hail, 25th.

Snow, 1st, 3d, 4th, 6th, 7th, 10th, 14th, 14th, 19th, 21st, 26th, 26th.

Gales, 49m. 4th, N.; 39m. 10th, N.N.E.; 36m. 11th, N. N. W.; 40m. 16th, N. W.; 45m. 20th, N. N. W;, 40m. 26th, W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	29.99	29.67	29.761	29.0	0 A	18.0	7 P	23.5	22.9	21.0	0 3
2	30.26	29.84	30.084	33.5	2 P	19.0	0 A	26.3	25.8	23.0	5.7
3	30.40	29 86	30.318	24.0	1 A	11.0	8 A	17.5	19.5	14.5	5.2
4	29.86	29.36	29.498	28.0	6 P	21.0	0 A	24.5	24.4	23.3	0.0
5	30.08	29.66	29.944	28.0	3 P	18.0	7:30 A	23.0	22.4	19.0	9.5
6	30.08	29.70	29.960	32.0	3 P	4.0	5 A	18.0	20.2	20.3	4.0
7	29.97	29.68	29.839	38.0	11:30 A	18.0	12 P	28 0	31.3	29.3	2.7
8	30.03	29.90	30.003	30.0	4 P	0.0	6:30 A	15.0	14.4	8.5	9.7
9	30.04	29.66	29.901	20.0	6 P	−7.0	7 A	6.5	7.7	9 3	4.3
10	29.66	29.42	29.507	18.0	5 P	11.0	7 A	14 5	14.3	12.3	0 0
11	29.72	29.52	29.614	20.5	4 P	6.5	8:30 A	13.5	13.7	10.5	8.6
12	30.04	29.72	29 953	36.0	5 P	11.0	0 A	23.5	21.9	18.5	9.8
13	30.04	29.91	29.981	34.0	4:30 P	3.0	7 A	18 5	18.5	13.0	6.6
14	29.91	29.41	29.662	33.0	3 P	23.0	1 A	28.0	28 5	29.5	0.0
15	29.74	29.41	29 661	41.5	1 P	31.0	0 A	36.3	35.7	31.5	4 0
16	30.18	29.74	30.005	36.0	0 A	19.0	12 P	27.5	22 9	16.7	6 7
17	30.33	30.18	30.263	37.5	3:30 P	6.0	7 A	21.7	24.9	20 5	8.7
18	30.20	29.76	30.085	41.0	4 P	16.0	6 A	28.5	29.7	23.5	4.5
19	29.76	29.20	29.353	38.0	3 P	24.0	12 P	31.0	34.0	32.7	0.0
20	29.92	29.44	29 890	24 0	0 A	18.0	6 A	21.0	20.7	16.5	9.2
21	30.11	29.88	30.072	31.0	4:30 P	13 0	6 A	22.0	22.7	20.0	10.0
22	30.01	29.85	29.958	25.0	7 A	21.0	12 P	23.0	22.6	20.5	0.0
23	30.18	30.00	30.110	28.0	4 P	10.0	7 A	19.0	20.5	15.5	10.5
24	30.32	30.18	30.314	40.5	6 P	5.0	7 A	22.7	24.0	16.7	10.2
25	30.24	29.24	29.731	43.0	7 P	8.5	7:30 A	25.7	24.5	26.3	0 0
26	29.52	29.23	29.364	41.0	9 A	25.0	12 P	33.0	35.6	32.0	3.6
27	29.73	29.51	29.599	26.0	3 P	16.0	12 P	21.0	22.0	20.3	5.7
28	30.03	29.73	30.034	30.0	4 P	9.0	7:30 A	19.5	20.7	17.0	9.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	20.5	.115	95.5	N.N.E.	259	2.5	22	12 M	0 A	8 P	.57	3½
2	17.0	.137	70.5	N.W.	166	3.0	24	5 P				
3	11.0	.092	83.5	N.E.	120	1.0	14	11 P	8 P	12 P	.05	½
4	22.0	.129	94.0	N.	415	12.0	49	12 M	0 A	6 P	1.12	10
5	12.0	.115	69.5	N.W.	316	5.0	32	1 A				
6	17.0	.121	88.0	S.S.W.	179	3.5	26	1 P	6 P	12 P	.08	1
7	24.5	.178	76.5	W.	169	4.0	28	4 P	0 A	8 A	.04	½
8	3 0	.073	74 0	N.W.	84	0.5	10	12 M				
9	−3.5	.061	65.5	N.	37	0.0	—					
10	8.5	.082	82.5	N.N.E.	326	7.5	39	2 P	3 A	5 P	.65	10
11	7.5	.075	85.0	N.N.W.	338	6 5	36	4 P				
12	11.0	.116	66.0	N.N.W	230	5.5	33	1 A				
13	9.0	.091	80 0	S.	24	0.0	—					
14	29.5	.162	100.0	N.	70	3.5	26	11 P	6 A	12 P	.82	6
15	26.5	.197	74.0	N.W.	69	3.0	24	1 A				
16	5.5	.110	54.5	W.N.W.	340	8.0	40	12 M				
17	18.5	.125	88.5	S.S.W.	150	1.5	17	4 P				
18	19.5	.146	77.0	S.W.	48	0.0	—		10 P	12 P	.20	
19	31.5	.192	92.5	N.	82	5.5	33	9 P	0 A	7 P	.54	¼
20	10.5	.102	72.5	W.N.W.	385	10.0	45	6 A				
21	15.0	.120	73.0	W.	95	0.0	—		10:30 P	11:30 P	.01	T
22	17.0	.120	80 0	N.	113	1.5	17	9 A				
23	7.5	.101	63.0	N.N.W.	168	2 5	22	9 P				
24	5 5	.115	53.5	W.	92	0.0	—					
25	25 0	.166	94.5	S.W.	94	3 0	24	5 P	11 A	12 P	.93	1
26	27.0	.208	73.5	W.	321	8 0	40	12 M	11 A	12 M	T	T
27	16 0	.120	76.5	N.W.	295	5.0	32	6 P				
28	14.0	.106	84 0	N.W.	288	4.0	28	12 M				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The month proved to be the most seasonable of the Winter. Starting with a moderate snowfall on the 1st, this was augmented by a very heavy snow on the 4th and another on the 10th, giving a total of about two feet for the first third of the month. Practically no thawing weather occurred during this period and traffic was greatly impeded. Another heavy snow occurred on the 14th and while some mild weather occurred later in the month, the ground was well blanketed with snow when the month closed. Where the roads were kept open there was good sleighing throughout the month.

The barometer was very active with several very low readings after very rapid falls. These depressions came roughly about a week apart. The mean barometer was considerably below the normal. The total wind movement was more than usual and several moderate gales were registered. The wind was rather persistently from the northwest quadrant.

The month was slightly colder than usual, although the temperature fell below zero but once. The maximum temperature was about eight degrees below the normal for this feature and only a few readings above forty degrees were registered.

The total precipitation was about fifty per cent. more than normal and much the greater portion was snow.

The mean dew point was slightly lower than the normal and the relative humidity nearly the usual amount.

The amount of sunshine was less than the normal value and the number of cloudy days greater than usual.

J. E. OSTRANDER, Meteorologist

JAMES BOWER Jr., Observer.

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BULLETIN No. 447. MARCH 1926

Meteorological Observations

AT THE

MASSACHUSETTS

AGRICULTURAL EXPERIMENT

STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.27, 6th, 8 A.
Minimum reduced to freezing,	28.88, 24th, 3 A.
Reduced maximum reading,	30.60 6th, 8 A.
Reduced minimum reading,	29.19, 24th, 3 A.
Mean semi-daily reduced	29.932
Monthly range	1.41

Air Temperature. In Degrees Fahr.

Highest	57.0, 22d, 5 P.
Lowest	-0.5, 6th, 7 A.
Mean hourly	29.4
Mean of means of max. and min.	29 4
Mean sensible (wet bulb)	26.3
Monthly range	57.5
Highest mean daily	42.1, 25th
Lowest mean daily	12.2, 5th
Mean maximum	38.3
Mean minimum	20.5
Mean daily range	17.8
Greatest daily range	36.0, 6th
Least daily range	6.0, 3d

Humidity.

Mean dew point	21.2
Mean force of vapor	.163
Mean relative humidity	75.4

Precipitation. In inches.

Total precipitation, in inches	3.95
Total snow, in inches,	9
Number of days on which .01 inch or more rain fell	11
Days of sleighing,	19

Wind.

Total movement	4884m
Greatest daily movement	298m, 8th
Least daily movement	40m, 22d
Mean daily movement	157m
Mean hourly velocity	7.5m

Maximum pressure per square foot, 10.0 lbs= 45m per hour, 8th, 10 A., N.W.

Maximum velocity for 5 minutes, 30m per hour, 8th, 10 A., N.W.

Prevailing direction, West Northwest.

Summary.

Northwest	29 per cent.
West	16 " "
West Northwest	13 " "
North	13 " "
South	10 " "
Other directions	19 " "

Weather.

Mean cloudiness observed	43 per cent
Total cloudiness recorded by the Sun Thermometer	151 hours = 41 per cent
Number of clear days	15
Number of fair days	7
Number of cloudy days	9

Bright Sunshine.

Number hours recorded, 219 = 59 per cent.

Rain, 2d, 7th, 8th, 20th, 23d, 25th, 31st.

Sleet, 31st.

Snow, 2d, 7th, 8th, 15th, 16th, 17th, 20th 25th, 26st, 30th, 31st.

Gales, 36m. 4th, W.N.W.: 40m, 5th, N.W.: 45m. 8th, N.W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean, Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.02	29.74	29.868	42.0	4 P	28.0	0 A	35.0	35.4	33.0	3 5
2	29.77	29.50	29.636	38.0	2:30 P	28.0	12 P	33.0	33.3	31.0	4.6
3	29.78	29 67	29.732	25.0	3 P	19.0	12 P	22.0	22.7	19.0	6.2
4	30.01	29.78	29.947	25.0	4 P	13.0	12 P	19.0	18.5	14.7	9.2
5	30.50	30.01	30.355	21.5	4 P	4.0	7 A	12.7	12.2	10.0	10 5
6	30.60	30.28	30.473	35.5	5 P	−0.5	7 A	17.5	17.8	15.0	10 5
7	30.28	29.31	29.663	35.0	3 P	22.0	6 A	28 5	28 2	28 3	0.0
8	29.61	29.28	29.484	36.0	1 A	21.0	12 P	28.5	28.0	25.0	7.0
9	30.03	29.60	29.819	34.0	5 P	17.0	7 A	25.5	23.5	21.7	10.5
10	30.13	30.03	30.132	40.0	3 P	11.5	7 A	25 7	25.0	23.5	9 7
11	30.13	30.00	30.057	34.5	3 P	14 0	7 A	24.3	24.9	22.0	9 5
12	30.00	29.85	29.972	32.5	3 P	12.5	6 A	22.5	22.2	21.7	6.3
13	30.05	29.94	30.018	31.0	3 P	10.5	7 A	20.7	22.0	17.5	10.8
14	30.12	30.05	30.085	28.0	3 P	7.5	7 A	17.7	19.6	15.5	10.6
15	30.10	29.89	29.980	34.0	5 P	14 0	6 A	24.0	25.1	21.5	6 0
16	29.95	29.85	29.911	37.0	3 P	13.0	7:30 A	25.0	26.9	22 5	7 9
17	30.20	29.95	30.150	39.5	4 P	16 0	7 A	27.7	28.1	23.7	10.0
18	30.21	29.97	30.079	44.0	4 P	24 0	0 A	34 0	32.6	29.0	4.1
19	30.28	30.05	30.195	41.5	2 P	18.5	7 A	30.0	32.5	27.0	7.6
20	30.12	29.86	29.948	44.5	12 M	35.0	0 A	39.7	37.2	36.3	0.5
21	30.34	30.12	30.328	48.5	5:30 P	28 0	7 A	38.3	36.9	31 5	11.3
22	30.30	29.90	30.106	57.0	5 P	24.5	7:30 A	40 7	39.5	35.7	10.3
23	29 90	29.23	29 432	45.0	3 P	35.5	0:30 A	40.3	40.0	37.3	0.0
24	29.49	29.19	29.372	45.5	2 P	36.0	1 A	40.7	39.7	36.7	4.0
25	29.64	29.32	29.449	54.0	2 P	33 5	7 A	43 7	42.1	38.3	3 9
26	29 66	29.55	29.606	39.0	11 A	31 0	12 P	35.0	35.0	33 5	0.0
27	30.00	29.64	29.888	42.5	1:30 P	24.5	6 A	33.5	32.7	27.5	11.0
28	30.13	30.00	30.111	34 0	5 P	22.0	7 A	28.0	28.0	24 3	10.9
29	30.17	30.08	30.143	38.5	4 P	21.0	6 A	29 7	30.5	27.5	11.4
30	30.24	30.10	30.203	49.0	3 P	25.0	7 A	37.0	37.5	31.7	11.6
31	30.16	29.41	29.818	37.0	1 P	28.0	2 A	32.5	34.4	33.7	0.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	28.0	.214	72.0	S.S.W.	191	2.0	20	2 A				
2	28.0	.183	84.0	N.	102	4.0	28	2 P	2 A	12 M	.93	1
3	12.0	.117	66.0	W.	208	3.5	26	3 P				
4	5.5	.097	61.5	W.N.W.	238	6.5	36	8 A				
5	0.5	.080	59.5	N.W.	200	8.0	40	1 P				
6	6.5	.105	64.0	S.	120	2.5	22	6 P				
7	28.0	.158	100.0	N.W.	70	1.0	14	12 P	3 A	12 P	1.56	3¾
8	18.0	.152	68.0	N.W.	298	10.0	45	10 A	0 A	4 A	.25	1
9	15 0	.130	71.0	N.	237	3.5	26	3 P				
10	18.0	.143	71 0	N.W.	89	1.5	17	5 P				
11	14.5	.134	65.5	N.W.	116	1.0	14	3 P				
12	19.0	.124	86.5	N.	145	1.0	14	8 A				
13	9 5	.111	65 0	N.	137	1.5	17	4 P				
14	7.5	.101	62.5	N.W.	169	2.0	20	1 P				
15	16.0	.131	64 0	S.	70	0 5	10	2 P	4 P		T	T
16	18.0	.134	81.5	S.W.	75	1.5	17	3 P	7 P	12 P	.19	2
17	18.0	.141	72.5	N.W.	126	1.5	17	9 A	0 A	2 A	.04	½
18	24.5	.179	76.5	W.	142	1.5	17	5 P				
19	17.0	.177	57.5	S.	99	3.0	24	10 P				
20	35.0	.219	93.5	W.	172	1.5	17	5 P	0 A	6 P	.26	T
21	27.5	.199	78.0	W.N W.	175	1.0	14	1 A				
22	33 0	.231	84 5	S.S.W.	40	0.0	—					
23	35 0	.238	86.0	S.S W.	163	2 5	22	1 P	0 A	8 A	.01	
24	32 0	.240	77.0	W.N.W.	261	5.0	32	5 P				
25	37.0	.241	93.5	W.	185	5 5	33	7 P	1 A	8 A	.08	T
26	32.5	.194	95.5	N.N.E.	136	1.0	14	10 A	11 A	9 P	.10	½
27	21.0	.169	68.5	N.W.	200	3.5	26	3 P				
28	19 0	.145	74 5	W.N.W.	221	5.0	32	7 P				
29	23.0	.165	76.0	W.	199	2.5	22	3 P				
30	26.5	.202	72.5	N.W.	106	1.0	14	11 A	3 A	5 A	.01	T
31	32.0	.200	90.5	E.	134	3.0	24	10 P	11 A	12 P	.52	¼

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was mostly wintry and progress toward spring conditions was rather slow. The large amount of snow on the ground when the month opened disappeared very slowly, and in places some of it remained when the month closed. The first half of the month had but little thawing weather. The wind movement was considerably less than usual for March, and the few gales noted were recorded early in the month. The month closed with a very low barometer and a severe storm of rain, sleet and snow in progress.

The mean barometer was very low for the time of year, and the range was practically normal. There were three very marked depressions during the month.

The wind was largely from the northwest quadrant and had considerable effect on the temperature.

The mean temperature was nearly five degrees lower than the normal and the maximum and minimum were approximately the same amount lower than usual. A temperature above fifty degrees was reached on only two days.

The mean dew point was unusually low while the relative humidity was practically normal.

The total precipitation was practically normal; a moderate amount occurring as snow. Nearly one-half of the total occurred during a very severe storm on the 7th-8th.

The amount of sunshine was very large and about one-half of the days were classified as clear.

The month closed with the season's progress much delayed.

J. E. OSTRANDER, Meteorologist

JAMES BOWER Jr., Observer.

Massachusetts Agricultural College
AMHERST, MASS.

BULLETIN No. 448. APRIL 1926

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.02, 13th, 6 A.
Minimum reduced to freezing,	29.04, 1st, 4 A.
Reduced maximum reading,	30.34, 13th, 6 A.
Reduced minimum reading,	29.35, 1st, 4 A.
Mean semi-daily reduced	29.926
Monthly range	0.99

Air Temperature. In Degrees Fahr.

Highest	75.5, 22d, 3 P.
Lowest	18.0, 12th, 6 A.
Mean hourly	41.4
Mean of means of max. and min.	41.2
Mean sensible (wet bulb)	37.7
Monthly range	57.5
Highest mean daily	59.8, 22d
Lowest mean daily	32.1, 12th
Mean maximum	51.7
Mean minimum	30.9
Mean daily range	20.8
Greatest daily range	36.5, 21st
Least daily range	6.0, 8th

Humidity.

Mean dew point	32.8
Mean force of vapor	.271
Mean relative humidity	75.0

Precipitation. In inches.

Total precipitation, in inches	3.62
Total snow, in inches	3¾
Number of days on which .01 inch or more rain fell	10

Wind.

Total movement	6063m
Greatest daily movement	386m, 26th
Least daily movement	75m, 7th
Mean daily movement	202m
Mean hourly velocity	8.4m

Maximum pressure per square foot, 8.5 lbs = 41m per hour, 17th, 2 P., N.W.

Maximum velocity for 5 minutes, 30m per hour, 17th, 4 P., N.W.

Prevailing direction, West Northwest.

Summary.

Northwest	23 per cent.
West	20 " "
West Northwest	10 " "
Southwest	10 " "
North	10 " "
Other directions	27 " "

Weather.

Mean cloudiness observed	49 per cent
Total cloudiness recorded by the Sun Thermometer	208 hours = 52 per cent
Number of clear days	13
Number of fair days	8
Number of cloudy days	9

Bright Sunshine.

Number hours recorded, 195 = 48 per cent.

Rain, 1st, 3d, 5th, 7th, 8th, 9th, 16th, 22d, 24th, 25th, 28th, 30th.

Snow, 1st, 3d, 7th.

Frosts after the 15th, 18th, 19th, 20th, 21st, 27th.

Thunder and Lightning, 22d, 24th.

Gales, 35m 4th, N.W.; 35m, 5th, W.; 40m, 15th, S.W.; 35m, 16th, S.; 41m, 17th, N.W.; 37m, 20th, N.W.; 36m, 22d, W.N.W.; 39m, 25th, S.S.W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	29.70	29.35	29.480	41.5	4:30 P	32.0	8 A	36.7	35.8	33.7	1 2
2	30.08	29.70	29.987	41.5	4 P	31.0	3 A	36.3	35.5	31.7	6.0
3	30.16	29.68	29.991	44.0	4 P	24.5	6 A	34.2	35.3	33.5	4.7
4	29.99	29.66	29 871	45.0	5 P	33.0	0 A	39.0	38.9	34.5	9.1
5	29.97	29.71	29.852	48.0	4 P	33.0	6 A	40.5	40.8	37.7	0.2
6	30.21	29.85	30.169	43.5	4 P	28.0	7 A	35.7	36.0	31.7	12 0
7	30.20	29.98	30.109	36.0	6 P	26.0	2 A	31 0	32 5	32.0	0.0
8	30.06	29.68	29.840	38.0	4 P	32.0	2 A	35.0	35.8	35.3	0.0
9	30 03	29.68	29.967	55.0	3 P	34.0	5 A	44.5	44.3	38.0	10.2
10	30.19	29.90	30.096	56.0	2:30 P	36.0	6 A	46 0	45.3	33.5	11.8
11	30.16	29.84	30 010	50.0	9 A	27 0	12 P	38 5	40 9	34.0	5.9
12	30.29	30.14	30.259	44.0	5 P	18.0	6 A	31.0	32.1	28.3	10.9
13	30.34	30.11	30.240	55 0	4 P	20.5	6 A	37 7	38.4	32.5	11.5
14	30.15	29 76	29 960	63.0	2:30 P	29.0	6:30 A	46.0	45.4	38.5	9.7
15	29.89	29.74	29.876	42.5	2:30 P	28 0	12 P	35.2	36 9	29.0	10 0
16	29 88	29.45	29.620	57.0	3 P	24.0	6 A	40.5	41 7	38.3	5 0
17	29.85	29.44	29 639	40 0	9 A	32 0	12 P	36.0	37.4	31.5	6.0
18	30.10	29.85	30.031	46 0	4 P	26 5	4 A	36 2	36.8	31.3	11.0
19	30.14	29.96	30.058	43.0	2 P	20.0	6 A	31.5	33 6	28.5	9.0
20	30.02	29.82	29 911	45.0	5 P	22.0	6 A	33.5	34.1	32.0	10.0
21	29.84	29.60	29.706	67 0	4 P	30.5	4 A	48.7	51.1	45 3	8.5
22	29.78	29.65	29.724	75.5	3 P	41.5	2 A	58.5	59.8	58.0	3.4
23	29.91	29.73	29 847	71.0	5 P	51.0	6 A	61.0	59.2	53.3	8.0
24	30.01	29.64	29.873	70.0	2:30 P	41.0	6 A	55.5	53.4	53.0	11.0
25	29.80	29.57	29.639	60 9	12 M	40.0	5 A	50.0	47.5	47.0	1 6
26	30.01	29.80	29 971	48.0	3:30 P	33 0	12 P	40.5	39 5	38 5	0.3
27	30.13	29.99	30.092	55.0	4 P	28.0	6 A	41.5	41.8	41.2	10.5
28	30.13	30.01	30.031	55 0	12 M	31.0	3 A	43.0	42.0	42.7	0.0
29	30.04	29.95	30.028	57.0	2:30 P	38 0	7 A	47.5	45.2	41.0	6.5
30	29.98	29.80	29.905	58 0	3 P	36.0	4 A	47.0	46.8	46.2	0.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	32.0	.200	91.0	W.N.W.	218	5 5	33	9 P	0 A	1 P	.54	$\frac{3}{4}$
2	27.0	.196	76.5	W.N.W.	249	2.5	22	11 A				
3	32.0	.194	90.0	N.W.	90	2.0	20	4 P	5 P	12 P	.34	$1\frac{1}{2}$
4	30.0	.222	74.5	N.W.	293	6.0	35	1 P				
5	34.0	.248	79 5	W.	183	6.0	35	4 P	11 A	1 P	.04	
6	25.0	.206	68.0	N.N.W.	132	4.0	28	2 P				
7	30.5	.190	90.5	S.E.	75	1.0	14	8 A	2 A	3 P	.47	1
8	35.0	.206	100.0	N N.E.	91	0.0	—		0 A	12 P	.77	
9	31.5	.272	66.5	N N.W.	212	5.0	32	11 A	0 A	2 A	.01	
10	31.0	.290	74 5	W.	234	2.0	20	3 P				
11	25.5	.246	58.0	W.	215	4.0	28	3 P				
12	17.0	.190	53.0	N.	193	1.5	17	1 A				
13	24.0	.230	58 0	S.S W.	118	2.5	22	4 P				
14	32.5	.284	67.0	S.	181	3.0	24	4 P				
15	23.0	.179	69 5	S.W.	337	8.0	40	11 A				
16	34.0	.254	81.0	W S.W.	248	6 0	35	12 M	5 P	8:30 P	T	
17	24.5	.207	64.0	N.W.	336	8.5	41	2 P				
18	21 5	.215	54.5	W.N.W.	258	2.5	22	1 P				
19	16.5	.195	48.5	N.	159	4.0	28	10 A				
20	25.0	.213	64.5	N.	260	7.0	37	9 A				
21	36.0	.421	50.5	W.	276	5.5	33	3 P				
22	50.5	.551	83.5	W.	172	6.5	36	2 P	3 A	4 A	.04	
23	54.0	.498	86.0	N.W.	161	1.5	17	3 P				
24	51.0	.446	82.5	S.W.	150	5.0	32	3 P	10 P	12 P	.54	
25	46.0	.345	91.5	W.	232	7.5	39	11 A	0 A	8 P	.58	
26	36.0	.253	84.5	N.W.	386	3.5	26	2 A				
27	37 5	.289	77.5	N.W.	159	3.5	26	2 P				
28	42 0	.285	94 0	S.W.	125	4.0	28	10 A	9 A	8 P	.29	
29	38.0	.282	81.0	N.W.	207	3.0	24	12 M				
30	44.0	.342	86.5	S.S.W.	113	3.0	24	5 P	8 A	10 A	T	

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The backwardness of Spring, so evident when the month opened, became more pronounced during the month and but little seasonal progress was made. At the close of the month the season was from two to three weeks behind normal conditions. The most noticeable feature was the delay in the starting of the foliage of the trees. Only two real springlike days were noticed —the 22d and 23rd.

The month was one of the coldest Aprils since this station was established and the rather large amount of cloudiness helped delay normal progress. Several light snowstorms early in the month also contributed to the season's delay.

The records of the several weather elements show the following features of interest: The mean barometer was considerably lower than the normal and the range of pressure was comparatively small. The maximum and minimum pressures were both rather low. Notwithstanding the relatively small changes of pressure the total wind movement was more than ten per cent greater than usual and much of it was from the northwest quadrant. Although the wind movement was large the few gales registered were of only moderate intensity.

The mean temperature was fully five degrees below the normal and the maximum temperature was about four degrees lower than usual. The minimum temperature was also rather low.

The mean dew point was rather low and the relative humidity considerably greater than usual.

Thr total precipitation was more than the normal although the middle of the month was comparatively dry.

The amount of sunshine was about ten per cent less than normal.

The month closed with vegetation and spring planting hardly started.

J. E. OSTRANDER, Meteorologist

JAMES BOWER Jr., Observer.

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BULLETIN No. 449. MAY 1926

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.06, 28th, 6 A.
Minimum reduced to freezing,	29.08, 9th, 12 M.
Reduced maximum reading,	30.36, 28th, 6 A.
Reduced minimum reading,	29.38, 9th, 12 M.
Mean semi-daily reduced	29.876
Monthly range	0.98

Air Temperature. In Degrees Fahr.

Highest	80.0, 3rd. 1 P.
Lowest	30 0, 5th, 5.30 A.
Mean hourly	55.3
Mean of means of max. and min.	55 5
Mean sensible (wet bulb)	52.3
Monthly range	50.0
Highest mean daily	65.5, 18th
Lowest mean daily	45.0, 4th
Mean maximum	68.5
Mean minimum	42.5
Mean daily range	26 0
Greatest daily range	42.0, 6th
Least daily range	11.5, 31st

Humidity.

Mean dew point	49.3
Mean force of vapor	.445
Mean relative humidity	81.6

Precipitation. In inches.

Total precipitation, in inches	1.19
Number of days on which .01 inch or more rain fell	8

Wind.

Total movement	5150m
Greatest daily movement	385m, 25th
Least daily movement	58m, 28th
Mean daily movement	166m
Mean hourly velocity	6.9m

Maximum pressure per square foot, 8.0 lbs = 40m per hour, 25th, 11 A., N.W.

Maximum velocity for 5 minutes, 27m per hour, 25th, 11 A., N.W.

Prevailing direction, North Northwest.

Summary.

Northwest	19 per cent.
North	16 " "
Northeast	13 " "
South	16 " "
East	10 " "
Other directions	26 " "

Weather.

Mean cloudiness observed	49 per cent
Total cloudiness recorded by the Sun Thermometer	240 hours = 53 per cent
Number of clear days	4
Number of fair days	17
Number of cloudy days	10

Bright Sunshine.

Number hours recorded. 213 = 47 per cent.

Rain. 2d, 3d, 9th, 11th, 13th, 16th, 17th, 19th, 23d, 27th, 31st.

Frosts 5th, 6th.

Thunder and Lightning. 2d, 9th, 11th, 13th, 19th.

Gales. 39m. 8th, N.; 36m, 12th, N.W.; 35m. 21st, S.; 40m. 25th, N.W.;

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.08	30.01	30.046	71.0	6 P	37.0	6 A	54.0	54.4	50.5	10 2
2	30.08	29 82	29.943	78 0	3 P	45.0	6 A	61.5	61.0	57.7	4.0
3	29 84	29.55	29.714	80 0	1 P	52.0	6 A	66.0	62.3	57.7	5.0
4	30.08	29.75	30.021	57.5	4:30 P	35.0	5 A	46.2	45.0	43.0	8.5
5	30.13	30.05	30.104	66.0	4 P	30.0	5:30 A	48.0	49.2	45.0	11.0
6	30.14	26.89	30.023	75.0	4 P	33.0	5:30 A	54.0	56.2	52.5	9 0
7	29.98	29.83	29.935	74.5	3:30 P	40.0	5:30 A	57.2	58 9	49.0	10.5
8	29.83	29.50	29.639	68.5	4 P	38.5	6 A	53.5	52.5	42.5	6.7
9	29.63	29.38	29.511	55.0	4 P	35.5	5:30 A	45.2	46.0	43.7	3.5
10	29 64	29.57	29.625	63.0	1 P	42.0	6 A	52.5	49.4	46.0	4 0
11	29.67	29.57	29.628	59.0	12:30 M	41.5	6 A	50.2	48.6	45.5	4.0
12	29.71	29.63	29.676	67.0	4 P	37 0	5 A	52.0	48.4	48.7	9.1
13	29.83	29.61	29.750	76.0	4 P	36.0	5:30 A	56 0	58.4	56.0	10.4
14	29.81	29.73	29.785	67.0	5 P	49.5	6 A	58.2	55.3	52.7	1.4
15	29.88	29.81	29.866	67 5	3 P	46 0	6 A	56.7	54 0	58.5	4 5
16	29.82	29.64	29.787	60.0	3 P	44.5	12 P	52.2	52.4	51.3	0.2
17	29 76	29.62	29 700	79.0	6 P	51.0	6 A	65.0	62.4	60.0	8.0
18	29.84	29.70	29.778	78.0	3 P	48 0	6 A	63.0	65 5	64.0	9.2
19	29.86	29.61	29.777	76 0	5 P	52.5	6 P	64.2	62.3	58.3	7.0
20	29.97	29.59	29.783	62 0	3:30 P	47.0	12 P	54.5	53 6	49.7	10.0
21	30.06	29.90	29 974	72.0	2:30 P	38 0	6 A	55.0	55.4	53 0	10.2
22	29.91	29.71	29.816	75.5	3:30 P	47.0	6 A	61.2	61.9	60.5	8.8
23	29.90	29.73	29.842	63.0	2:30 P	45.0	11 P	54.0	54.7	50.5	3.5
24	29.85	29.71	29 807	65 0	2:30 P	43.0	3 A	54.0	54.3	52.0	10.0
25	29.83	29.70	29.792	70.0	3:30 P	43.5	2 A	56 7	57.0	54.5	11 0
26	29.96	29.82	29 878	67.0	3 P	38 0	6 A	52.5	55 7	51 5	6.5
27	30.27	29.96	30.159	58.0	11:30 P	43.0	12 P	50.5	52.4	50.3	0.0
28	30.36	30.27	30.332	65.0	4 P	42.5	3 A	53.7	54.6	53 0	10.0
29	30.33	30.24	30.295	73.0	5 P	40.0	5:30 A	56.5	57.6	55.0	9.0
30	30.25	30.06	30.162	78 0	4 P	46.0	5 A	62.0	58.8	53.5	7.5
31	30.07	29.95	29.999	60.0	4 P	49.5	4 A	54.7	55.5	55.5	0.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	47.5	.433	76.5	N.	140	1.5	17	11 A				
2	51.0	.526	74.0	S.	164	3.0	24	1 P	5 P	12 P	.04	
3	54.5	.551	78.5	S.W.	216	5.5	33	3 P	9 P	12 P	.07	
4	39.0	.321	75.5	N.W.	258	5.0	32	0 A				
5	40.5	.361	70.0	N.	129	4.0	28	10 A				
6	45.5	.511	61.5	N.E.	73	0.5	10	9 P				
7	41.5	.468	57.0	E.	164	3.0	24	5 P				
8	38.0	.324	73.0	N.	155	7.5	39	10 P				
9	39 0	.325	75.5	N.W.	285	5.5	33	11 A	8 P	12 P	T	
10	43.0	.363	80 0	N.E.	60	4.0	28	2 P				
11	42.5	.335	83.0	N.N.W.	175	5 5	33	4 P	3 P	8 P	.10	
12	47.0	.401	81.0	N.N.W.	234	6.5	36	1 P				
13	53.5	.504	82 5	S.	109	3.0	24	6 P	10 P	12 P	.17	
14	51.5	.422	90.0	S.	92	0.0	—					
15	47.5	.389	94 0	N.W.	111	1 5	17	2 P				
16	50.0	.388	95 0	N.N.E.	148	2.0	20	2 P	10 A	12 P	.26	
17	58.0	.571	88.5	N.	192	3.0	24	9 A	0 A	3 A	.02	
18	62 5	.658	86.5	N.E.	225	5.5	33	4 P				
19	57.5	.512	93.0	N.W.	93	2.5	22	8 P	6 P	12 P	.42	
20	46.0	.397	80.5	W.N.W.	251	5.5	33	1 P				
21	51.0	.446	82.5	W.	196	6.0	35	4 P				
22	58.5	.579	87 0	S S.E.	230	5.0	32	4 P				
23	48.5	.397	97.0	N.W.	212	3.0	24	5 P	6 A	8 A	T	
24	50.0	428	86 0	W N.W	295	5.0	32	12 M				
25	50.5	.501	75.5	N.W.	385	8 0	40	11 A				
26	57 5	.450	73 5	N.	141	1.0	14	8 P				
27	47 5	.396	84 0	N.E.	96	1.0	14	5 P	4 P	5 P	T	
28	50.0	.462	79.5	E.	58	1.0	14	12 M				
29	53.0	.472	88.5	E.	82	0.0	—	—				
30	52.0	.453	88.5	S.	105	2.0	20	6 P				
31	55.0	.460	94.0	S.	76	0.0	—	—	9 A	8 P	.11	

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The backwardness of the season, so marked during April, continued throughout the whole of this month. Generally cool nights and the lack of sufficient soil moisture materially retarded the progress of the season. The wind was from the north points of the compass most of the time and there was but little really warm weather. The precipitation was notably deficient and the few storms very light. In this section it has proved to be the latest spring in many years.

The barometer was generally low during nearly the whole month and the mean value one of our lowest for May. The range of pressure was slightly more than usual owing to a low minimum record rather early in the month. The wind movement was considerably more than normal.

The mean temperature was more than two degrees below the normal making it one of the coldest Mays on our records. The maximum temperature was seven degrees below the normal for this feature and that record was made early in the month. The minimum temperature was nearly normal.

Notwithstanding the low temperature there were no frosts at the station after the first week of the month. On low lands in the vicinity frosts were reported rather late in the month. The last week of the month was marked by rather cold nights.

The mean dew point was rather low and the relative humidity very high for this time of year.

The total precipitation was about one-third of the normal and most of it occurred before the middle of the month. The amount of cloudiness was more than usual.

J. E. OSTRANDER, Meteorologist

JAMES BOWER Jr., Observer.

BULLETIN No. 450. JUNE 1926

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	29.98, 17th, 6 A.
Minimum reduced to freezing,	29.29, 15th, 11 A.
Reduced maximum reading,	30.29, 17th, 6 A.
Reduced minimum reading,	29.59, 15th, 11 A.
Mean semi-daily reduced	29.915
Monthly range	0.70

Air Temperature. In Degrees Fahr.

Highest	86.5, 25th, 3 P.
Lowest	35.0, 17th, 5.30 A.
Mean hourly	61.3
Mean of means of max. and min.	61 6
Mean sensible (wet bulb)	57.2
Monthly range	51.5
Highest mean daily	72.3, 30th
Lowest mean daily	51.0, 5th
Mean maximum	73.7
Mean minimum	49.4
Mean daily range	24.3
Greatest daily range	39.0, 17th
Least daily range	7.0, 7th

Humidity.

Mean dew point	54.1
Mean force of vapor	.553
Mean relative humidity	78.9

Precipitation. In inches.

Total precipitation, in inches	2.03
Number of days on which .01 inch or more rain fell	11

Wind.

Total movement	3951m
Greatest daily movement	292m, 3rd
Least daily movement	46m, 23rd
Mean daily movement	131m
Mean hourly velocity	5.5m

Maximum pressure per square foot, 9.0 lbs = 43m per hour, 2d, 6 P., S.W.

Maximum velocity for 5 minutes, 24m per hour, 3d, 8 A., W.N.W.

Prevailing direction, West Southwest.

Summary.

South Southwest	23 per cent.
Southwest	13 " "
Northwest	13 " "
South	10 " "
West	10 " "
East	10 " "
Other directions	21 " "

Weather.

Mean cloudiness observed	43 per cent
Total cloudiness recorded by the Sun Thermometer	211 hours = 46 per cent
Number of clear days	6
Number of fair days	16
Number of cloudy days	8

Bright Sunshine.

Number hours recorded. 246 = 54 per cent.

Rain, 1st, 2d, 5th, 7th, 8th, 9th, 14th, 15th, 18th, 22d, 25th. 26th.

Thunder and Lightning, 2d, 8th, 15th, 26th.

Frost on Low Ground, 17th.

Gales, 43m. 2d, S.W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean, Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	29.95	29.71	29.812	63.0	4 P	55.0	6 A	59.0	58 3	58.0	0 0
2	29.76	29.66	29.706	81.0	3 P	56.0	6 A	68.5	66.0	61.0	4.4
3	30.01	29.72	29.909	60.0	3:30 P	41.0	12 P	50.5	51.5	45.0	10.4
4	30.06	29.99	30.027	71.0	2:30 P	36.0	5 A	53.5	54.8	50.5	10.7
5	30.08	29.92	30.023	56.0	6 P	46.0	7 A	51 0	51.0	50.7	0.0
6	29.92	29.74	29.822	66.0	3 P	46.0	6 A	56.0	55.1	49 5	6 0
7	29.74	29.62	29.657	56.0	10 P	49 0	6 A	52.5	52 5	53.5	0.0
8	29.84	29.68	29 744	77.0	2 P	51.0	5:30 A	64.0	61.8	57.3	9.8
9	29.89	29.82	29 879	74.0	4 P	50.5	5 A	62.3	62 2	60.7	10.5
10	29.94	29.86	29.928	75.0	2 P	53.0	12 P	64.0	63.9	58 0	10.5
11	30.01	29 90	29 965	78.0	5 P	44.0	5 A	61.0	62 9	58.5	10.5
12	30.08	29.80	29.978	74.0	2 P	45 0	5 A	59.5	60.5	55.3	8.5
13	29.80	29.69	29.745	81.0	6 P	52.0	6 A	66 5	65.6	63.5	10.0
14	29.77	29.63	29 717	82.0	2 P	54.5	6 A	68.3	67.1	64.3	4.0
15	29.96	29.59	29.737	61 0	0 A	51.0	12 P	56.0	55 5	53.7	0.0
16	30.27	29.96	30.182	72.0	4 P	48.0	12 P	60.0	58.2	53.7	9 0
17	30.29	30.09	30.200	74.0	2 P	35 0	5:30 A	54.5	56.1	52.3	7 0
18	30.09	29.82	29.919	78.0	4:30 P	51 0	0 A	64.5	61.8	58.5	3.0
19	30.04	29.89	29 990	69 0	5:30 P	49 0	12 P	59.0	60.7	55.0	11.5
20	30.18	30.04	30.165	74 5	5 P	39.5	5:30 A	57.0	57 6	55.0	14.5
21	30.27	30.09	30.187	75.0	3 P	38 5	5:30 A	56.7	57.9	52.3	14.5
22	30.09	29.85	29.900	74.0	4 P	53.5	0 A	63.7	63.2	64.0	3.2
23	29.97	29 83	29.910	72.5	3 P	49.5	5:30 A	61.0	61.1	57.7	8.4
24	29.92	29.85	29 887	85 0	4:30 P	54.0	6 A	69.5	67.1	57.5	12.4
25	30.01	29.92	30.003	86.5	3 P	57.0	5:30 A	71 7	70.8	62.7	12.5
26	29.99	29.84	29.906	74.0	10 A	57 0	5:30 A	65.5	64 5	65 0	6.3
27	29.97	29.85	29.950	74.0	4 P	55.0	5 A	64.5	64.7	58.7	13.0
28	30.05	29.97	30.004	80.0	4 P	48.0	5:30 A	64.0	63.8	57.0	12.8
29	29.97	29.72	29.815	86.0	3:30 P	56 5	5 A	71.3	72.1	63.7	11 0
30	29.90	29.68	29 783	83.0	2:30 P	60.0	12 P	71.5	72.3	63.3	11.2
31											

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	58.0	.483	100.0	S.	79	0.0	—	—	9 A	10 P	.10	
2	60.0	.565	92.0	S.W.	117	9.0	43	6 P	6 A	8 P	.22	
3	40.0	.352	71.5	N.W.	292	4.5	30	8 A				
4	47.0	.430	73.5	W.N.W.	144	2.5	22	2 P				
5	49.0	.388	90.5	N.N.E.	94	1.0	14	1 P	10 A	8 P	.06	
6	47.0	.400	81.0	E.	83	0.5	10	2 P				
7	52.5	.422	95.5	W.	120	2.5	22	6 P	12 M	5 P	.15	
8	54.5	.534	81.0	S.S.W.	183	2.5	22	8 A	2 P	3 P	.01	
9	59 0	.579	87.0	W.	174	3.0	24	5 P	10 P	12 P	.20	
10	54.0	.598	69 5	N.W.	206	4.0	28	1 P				
11	56.5	.562	82.0	N.W.	118	3 0	24	1 P				
12	52.0	.499	81.5	S.S.W.	93	0.5	10	7 P				
13	62.5	.615	92 5	W.S.W.	81	0.0	—	—				
14	62.5	.662	86.5	S.	72	3.0	24	5 P	5 P	12 P	.24	
15	52.5	.427	93 5	E.	101	3 0	24	7 P	0 A	8 P	.21	
16	50.5	.485	76 0	E.	160	2.5	22	11 A				
17	49.5	.442	79.5	S.	87	4.5	30	3 P				
18	55.5	.572	81.5	S.S.W.	123	2.5	22	3 P	7:30 A	5 P	T	
19	51.0	.515	72.5	N.W.	180	1.5	17	1 P				
20	49.0	.561	59.5	N.N.E.	83	1.0	14	8 A				
21	48.0	.467	71.5	S.S.W.	174	4.5	30	4 P				
22	63.5	.614	96 0	S S.W.	205	3.0	24	7 A	12 M	7 P	.21	
23	57.0	.513	91.5	W.	46	0.0	—	—				
24	51.5	.593	68 0	N N.W.	51	0.0	—	—				
25	57.5	.775	62.5	S.W.	84	1.0	14	4 P	9:30 P	12 P	.05	
26	63 0	.688	84.5	S.S.W.	102	2.5	22	4 P	10 A	12 P	.58	
27	53 0	.653	62 0	W.N.W.	124	3.0	24	9 A				
28	51.0	.609	61.5	W.	123	1.0	14	9 A				
29	59 0	.793	63.0	S.S.W.	232	3.0	24	1 P				
30	57.5	.799	60.0	S.W.	220	3.5	—	12 M				
31												

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The subnormal temperature which prevailed throughout the spring continued during June up to nearly the close of the month. Notwithstanding the relatively low temperature and cold nights, the seasonal progress was rather rapid and the month closed with vegetation only about two weeks behind normal conditions. Corn, however, is so far backward that the chance for a crop to mature is far from good.

Generally the weather has been pleasant and free from high temperatures.

The records of the several weather elements, compared with their normals, show the following features: The mean barometer was unusually low and the change of pressure was rather slow and high wind records not in evidence. Wind directions were more variable than usual.

The mean temperature was nearly five degrees below the normal, making it the coldest June since 1903. Light frost was reported in many places on the 17th, but the damage done was not great.

The mean dew point was nearly three degrees below the normal while the relative humidity was rather high.

The total precipitation was about two-thirds of the normal and nearly all of it was in light showers, which failed to give much moisture to the soil. Heavy rain was much needed when the month closed.

The total wind movement was slightly more than normal.

The amount of cloudiness was nearly normal and about three fourths of the days were either clear or fair.

J. E. OSTRANDER, Meteorologist

H. W. WHEELER, Acting Observer.

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BULLETIN No. 451. JULY 1926

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.04, 26th, 8 A.
Minimum reduced to freezing,	29.21, 10th, 6 P.
Reduced maximum reading,	30.33, 26th, 8 A.
Reduced minimum reading,	29.50, 10th, 6 P.
Mean semi-daily reduced	29.961
Monthly range	0.83

Air Temperature. In Degrees Fahr.

Highest	100.0, 22d, 3 P.
Lowest	47.0, 5th, 5.30 A.
Mean hourly	69.3
Mean of means of max. and min.	70.3
Mean sensible (wet bulb)	62.8
Monthly range	53.0
Highest mean daily	82.7, 21st
Lowest mean daily	59.6, 29th
Mean maximum	83.8
Mean minimum	56.8
Mean daily range	27.0
Greatest daily range	39.5, 8th, 27th
Least daily range	11.0, 29th

Humidity.

Mean dew point	59.2
Mean force of vapor	.715
Mean relative humidity	74.1

Precipitation. In inches.

Total precipitation, in inches	3.24
Number of days on which .01 inch or more rain fell	9

Wind.

Total movement	2964m
Greatest daily movement	201m, 11th
Least daily movement	38m, 1st, 29th
Mean daily movement	96m
Mean hourly velocity	4.0m

Maximum pressure per square foot, 15.0 lbs = 55m per hour, 22d, 5 P., N.W.

Maximum velocity for 5 minutes, 30m per hour, 22d, 5 P., N.W.

Prevailing direction, South Southwest.

Summary.

North Northeast	16 per cent.
South	16 " "
South Southwest	16 " "
Southwest	16 " "
Northeast	10 " "
Other directions	26 " "

Weather.

Mean cloudiness observed	52 per cent
Total cloudiness recorded by the Sun Thermometer	160 hours = 35 per cent
Number of clear days	10
Number of fair days	17
Number of cloudy days	4

Bright Sunshine.

Number hours recorded. 302 = 65 per cent.

Rain. 6th, 10th, 13th, 14th, 15th, 16th, 18th, 22d, 24th. 29th.

Thunder and Lightning. 10th, 13th, 18th, 22d, 24th, 29th.

Gales. 51m. 10th, N.W.: 55m. 22d, N. W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.05	29.90	30 000	83 5	4 P	51.0	6 A	67.3	68.2	60.3	14.0
2	30.04	29.95	29.997	82.5	2:30 P	56.0	5:30 A	69.3	67.9	62.0	9 0
3	29.95	29.87	29.908	90.0	4:30 P	62.0	12 P	76.0	74.6	66.3	14.0
4	30.10	29.94	29.999	85 0	3:30 P	54.0	5:30 A	69.5	68 9	58.0	12.0
5	30.17	29.99	30.117	82.5	3 P	47.0	5:30 A	64.7	69 9	57.0	13.0
6	29.99	29.67	29.797	84 0	4:30 P	55.0	7:30 A	69.5	66.1	62.3	7.0
7	29.76	29.65	29.697	83 0	3 P	58.0	12 P	70.5	70.4	62.3	13.0
8	29.78	29.65	29.719	87.0	5 P	47.5	5 A	67.3	70 0	61.7	11.5
9	29.69	29.62	29.667	95 5	2 P	64.0	5 A	78.7	78.6	71.5	12.0
10	29.71	29.50	29.659	95 0	4 P	64.0	7 A	79.5	71.9	66.3	7 0
11	29 88	29.61	29.796	74 0	3 P	59.0	12 P	66.5	67.4	60.7	11.3
12	29.91	29.76	29.829	80.0	4:30 P	49.0	5:30 A	64 5	65.6	59.7	13.4
13	29.87	29.77	29 826	74.0	4 P	55.0	12 P	64.5	62.2	56.0	4.0
14	29.97	29.82	29.878	78.0	5:30 P	54.5	6 A	66.3	62.3	55.7	8.5
15	30.06	29.97	30.039	72.0	2 P	52.5	5 A	62.3	62.4	57.5	5.5
16	30.11	30.02	30 065	81.0	4:30 P	57.5	4:30 A	69.3	66.2	60.3	9.0
17	30.16	30.02	30.101	86.0	4 P	53 0	5:30 A	69.5	70.5	65 0	12 0
18	30.02	29.88	29.975	86.0	2:30 P	62.0	12 P	74.0	69.7	62.0	8 8
19	30.07	29.99	30 030	86.5	5 P	54.5	6 A	70.5	69.2	61.7	13.1
20	30.07	29.92	29 991	92.0	5 P	58.0	6:30 A	75 0	73.6	65.0	10.0
21	29.92	29.82	29.846	97.0	4:30 P	59.0	5 A	78.0	82.7	76 7	12.1
22	29.96	29.79	29 856	100.0	3 P	68.0	6 A	84 0	81.5	73.3	10.8
23	30.09	29.89	30.054	80.5	4 P	66.0	12 P	73.3	72.8	69 5	6 1
24	30.09	29.94	30 021	86.0	5 P	62.0	4 A	74.0	70.9	68.7	9.0
25	30.20	29 95	30.061	82 0	4:30 P	58.0	12 P	70.0	69.8	59 0	10.8
26	30.33	30.20	30.272	84.0	5 P	51.0	6 A	67.5	66.8	59.7	12.5
27	30.26	30.15	30 203	88.0	3 P	48.5	6 A	68.3	68.1	60 3	12.6
28	30.22	30.14	30.201	85.0	5 P	56.5	6 A	70.7	68.9	61.0	8 5
29	30.21	30.05	30 141	66.0	0 A	55 0	12 M	60.5	59.6	59 7	0.2
30	30.05	29.95	30.007	73.0	2 P	60.0	0 A	66.5	65.7	65.3	2.9
31	30.06	30.02	30.048	77.5	4 P	61.0	6 A	69.3	65.8	62.5	8.5

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.*	Snow.
1	55.5	.678	68.0	S.W.	38	0.0	—	—				
2	59 0	.664	76.5	S.W.	46	0.0	—	—				
3	62.0	.835	67.0	E.	82	1.0	14	12 M				
4	50.0	.686	55.5	E.N.E.	96	2.0	20	8 A				
5	52.5	.630	62.5	S.	115	2.0	20	2 P				
6	60.5	.635	88.5	S.W.	81	0.0	—	—	1 A	12 P	.02	
7	57.0	.712	68.0	N.	133	0.0	—	—				
8	55.5	.788	56.0	W.	130	3.5	26	8 P				
9	67.5	.994	69.0	S.	164	1.0	14	4 P				
10	65.0	.697	89 0	E.	122	13 0	51	7 P	5 P	5:30 P	.95	
11	57.5	.634	76.5	N.	201	1.5	17	11 A				
12	54.0	.683	62.5	S.S.W.	104	1.5	17	4 P				
13	52.0	.548	73 5	N.N.E.	101	4.0	28	7 P	5:30 P	12 P	.35	
14	51.5	.545	71.5	N.N.E.	84	0.0	—	—	0 A	6 A	.17	
15	54.5	.550	78.5	N.E.	69	0.0	—	—	11 P	12 P	.03	
16	57.5	.620	76.0	N.N.E.	120	1.5	17	10 A	0 A	2 A	T	
17	61.5	.778	71.0	S.S W.	109	2.5	22	7 P				
18	60.5	.673	82.5	S.S.W.	189	5.0	32	6 P	3:30 P	8:30 P	.64	
19	56.0	.718	65.5	N.N.E.	117	2 5	22	2 P				
20	62.5	.920	74.5	S.S.W.	76	0.0	—	—				
21	74.0	1.140	76.0	S.W.	151	1.5	17	2 P				
22	71.0	.950	81.0	S.W.	112	15 0	55	5 P	8:30 P	12 P	.15	
23	68.0	.788	87.5	N.W.	76	0.0	—	—				
24	68.0	.765	92 0	S.	42	0.0	—	—	7 A	8 A	.11	
25	52.5	.703	56.5	N.N.E.	92	2.0	20	1 P				
26	55.0	.657	65.0	N.W.	69	0.0	—	—				
27	56 0	.644	71 0	S.S.W.	43	0.0	—	—				
28	56 5	.694	68.0	S.	43	0.0	—	—				
29	59.0	.530	95.5	S.	38	0.0	—	—	5 A	12 P	.82	
30	64.0	.656	92.5	N.E.	63	0.0	—	—				
31	60.0	.658	79 0	N.E	58	0.0	—	—				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month has been more nearly normal than for several months. The extreme heat on the 21st and 22d was the most outstanding feature of the month. On the 22d the maximum temperature reached 100 degrees which is the highest reading recorded here since July 4, 1911, when 104 degrees was registered. On the 10th a very heavy thunder shower gave nearly an inch of water in half an hour, a rate of rainfall very rare in this section. A steady rain near the end of the month did much for growing crops.

The several weather elements show the following features: The mean barometer was practically normal and the range more than usual. The last week of the month was marked by a high and very steady pressure. The total wind movement was about eighty per cent of the normal and most of it came from the southwest quadrant.

The mean hourly temperature was more than a degree below the normal and the range more than usual. The maximum temperature was above ninety degrees on five days. The minimum temperature was below fifty degrees on three days.

The mean dew point and relative humidity were both nearly normal.

The total precipitation was about eighty per cent of the normal and most of it occurred during thunder storms.

The amount of sunshine was about fifty hours more than usual.

Only two gales were registered and both were over fifty miles per hour.

J. E. OSTRANDER, Meteorologist

H. W. WHEELER, Acting Observer.

BULLETIN No. 452. AUGUST 1926

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.10, 21st, 7 A.
Minimum reduced to freezing,	29.46, 7th, 5 P.
Reduced maximum reading,	30.40, 21st, 7 A.
Reduced minimum reading,	29.75, 7th, 5 P.
Mean semi-daily reduced	30.004
Monthly range	0.65

Air Temperature. In Degrees Fahr.

Highest	91.5, 3d, 2 P. 4th, 3-30 P.
Lowest	45.0, 21st, 6 A.
Mean hourly	67.7
Mean of means of max. and min.	69.0
Mean sensible (wet bulb)	63.8
Monthly range	46.5
Highest mean daily	76.6, 4th
Lowest mean daily	57.8, 21st
Mean maximum	78.8
Mean minimum	59.3
Mean daily range	19.5
Greatest daily range	31.0, 28th.
Least daily range	7.5, 16th

Humidity.

Mean dew point	61.4
Mean force of vapor	.678
Mean relative humidity	82.7

Precipitation. In inches.

Total precipitation, in inches	3.97
Number of days on which .01 inch or more rain fell	10

Wind.

Total movement	2375m
Greatest daily movement	212m, 29th
Least daily movement	21m, 10th
Mean daily movement	77m
Mean hourly velocity	3.2m

Maximum pressure per squarefoot, 4.5 lbs= 30m per hour, 30th, 4 P., W.

Maximum velocity for 5 minutes, 20m per hour, 30th, 4 P., W.

Prevailing direction, South

Summary.

South	42 per cent.
North	10 " "
West	10 " "
Other directions	38 " "

Weather.

Mean cloudiness observed	60 per cent
Total cloudiness recorded by the Sun Thermometer	224 hours = 52 per cent
Number of clear days	3
Number of fair days	13
Number of cloudy days	15

Bright Sunshine.

Number hours recorded. 205 = 48 per cent.

Rain. 2d, 3d, 7th, 11th, 12th, 13th, 14th. 16th, 19th, 22d, 23d, 24th, 26th.

Thunder and Lightning, 2d, 3d, 7th, 12th, 26th.

Gales. None

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DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean, Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.06	30.02	30.044	77.0	1:30 P	60.0	6:30 A	68.5	67.0	63.0	7.5
2	30.04	29.88	29.955	85.0	6 P	65.0	5 A	75.0	72.0	71.3	4 9
3	29.94	29.83	29.876	91.5	2 P	70.0	12 P	80.7	76.2	72.5	6·6
4	29.95	29.83	29.857	91.5	3:30 P	67.0	6 A	79.3	76.6	72.7	11.5
5	30.02	29.85	30.007	82.0	3 P	63.0	6 A	72.5	70.2	61.3	10.5
6	30.04	29.81	29.983	86.0	4:30 P	57.5	6 A	71.7	71.4	65 7	10.5
7	29.81	29.75	29 836	84.0	1:30 P	68.0	12 P	76.0	72.8	70.7	6.0
8	29.90	29.78	29 842	77.0	1 P	60.0	5:30 A	68.5	68.7	63.7	9.2
9	30.07	29.90	30.009	86.0	2:30 P	56.5	6 A	71.3	70 9	64.5	11.4
10	30.13	30.07	30.103	80.0	3:30 P	59.5	6 A	69.7	70.5	65.5	7·3
11	30.08	30.01	30.050	85.0	6 P	69.0	6 A	77.0	74·3	72.0	5.0
12	30.17	30.09	30.128	82.0	12 M	64.5	6 A	73.0	71.0	68.3	5.2
13	30.10	29.98	30.034	83.0	5 P	68.0	0 A	75.5	73·5	73·3	3·4
14	29 98	29.94	29.974	82.5	3 P	68.0	12 P	75 3	73·7	71.7	2.8
15	30.17	29.98	30.116	81.0	3 P	60 0	12 P	70.5	69.5	63.5	10.5
16	30.16	29.89	30 043	64.5	2 P	57.0	6 A	60.7	59 4	57.3	0.0
17	29.92	29.84	29.862	76.0	5 P	57 5	3 A	66.0	66.0	65 3	0 4
18	30 06	29.92	30.013	71.5	3:30 P	52 0	12 P	61.7	62.2	57.5	7.0
19	30.13	30.08	30.090	73.0	2 P	48.5	6 A	60.7	60.1	57.0	7·5
20	30.33	30.13	30.225	76.0	2 P	50.0	6 A	63.0	61.8	55.3	10.3
21	30.40	30.33	30.359	68.0	3 P	45 0	6 A	56.5	57.8	54 3	5.6
22	30.35	30.28	30.323	70.0	12 M	53·5	6:30 A	61.7	60.9	55.7	2.6
23	30.28	30.02	30.152	73.0	3 P	56.0	6 A	64.5	63 8	61 0	4.7
24	30.02	29.85	29.894	71.5	6 P	60.0	12 P	65.7	65.8	63.7	0 0
25	29.97	29 90	29.933	72.5	5 P	58.0	1:30 A	65.3	63.3	62.0	2.0
26	29 96	29 88	29.939	74.0	4 P	62 0	12 P	68 0	65 6	62.7	2.6
27	29.92	29.85	29 863	79.0	4 P	62.0	12 P	70.5	67.3	64 5	5·3
28	30.02	29.88	29.989	83.5	3 P	52.5	6:30 A	68.0	68.3	64.0	11 5
29	29.96	29.73	29 765	87.0	2 P	66.0	6:30 A	76.5	74.5	68 5	10.3
30	29.96	29.82	29.890	77.0	2:30 P	53 0	6:30 A	65.0	65.3	56.7	11.5
31	30.02	29.96	29.994	73.0	5 P	48 0	6:30 A	60.5	59.3	53 7	11.8

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	60.5	.651	82.5	S.	79	2.0	20	3 P				
2	69.5	.821	89.5	S.	86	0.5	10	11 P	8:30 A	12 P	.69	
3	72.0	.840	93.0	S.	48	0.0	—	—	0 A	6 P	.13	
4	70.5	.903	83.5	N.N.E.	72	0.0	—	—				
5	56.0	.707	64.0	E.	69	0.0	—	—				
6	61.5	.750	78.5	W.	43	0.0	—	—				
7	70.5	.788	94.0	S.	80	2.5	22	3 P	5 A	12 P	.09	
8	61.0	.701	77.5	N.N.W.	119	1.5	17	4 P				
9	60.5	.768	68.5	N.W.	76	1.0	14	12 M				
10	62.0	.756	75 5	N.E.	21	0.0	—	—				
11	71.5	.822	94 0	S.	67	0.0	—	—	7:30 A	12 M	.09	
12	67.5	.745	89.5	S.E.	56	2.0	20	5 P	2:30 P	12 P	.64	
13	72.5	.856	73 0	S.	76	0.0	—	—	0 A	8 P	.20	
14	71.0	.808	94.0	W.	42	0.5	10	4 P	5 P	8 P	.42	
15	60.5	.711	74 0	N.N.E.	124	1.0	14	11 A				
16	56.5	.492	93.0	S.	49	0.0	—	—	7 A	9 P	.97	
17	64.0	.671	90.5	S.S.E.	45	0.0	—	—				
18	55.0	.526	84.0	N.	70	0.0	—	—				
19	55.0	.512	81.0	N.E.	78	0 0	—	—	8 P		T	
20	49.5	.558	64.0	E.	69	0.0	—	—				
21	52.5	.471	83.0	.S.E.	74	0.0	—					
22	52.0	.525	76.0	S.	69	1.0	14	4 P	8 A	12 P	T	
23	59.0	.588	88 5	S.	73	1 0	14	3 P	0 A	7 A	.09	
24	62.5	632	90.5	S.	148	2.0	20	11 A	7:30 A	2 P	T	
25	61.0	.583	93.5	N.	22	0.0	—					
26	60.5	.595	88 5	S.	40	0.0	—		1 A	9 A	.65	
27	62 5	.653	89 0	S.	93	0.5	10	6 P				
28	62 0	.664	84.0	S W·	51	0.0	—	—				
29	65.5	.837	75.5	S.	212	4.0	28	3 P				
30	51.0	.619	59.5	W.	174	4.5	30	4 P				
31	50.0	.493	73 5	N.	150	2.0	20	12 M				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during August was seasonable with somewhat more than the usual amount of humidity. Departures from normals were generally small and unimportant. The most marked feature was the persistency of the wind from the South, which accounts for the humid condition of the month. The rain was well distributed throughout the month and soil moisture very much improved. The first half of the month was much warmer than the last.

The records of the several weather elements show the following features of more or less interest : The barometer records were practically normal. The mean temperature was nearly normal, and the difference between the mean hourly and the mean of maximum and minimum readings was greater than usual. The mean temperature was below 60 degrees on three days.

The mean dew point was slightly higher than usual and the relative humidity six per cent above the normal.

The total precipitation was slightly less than the average and there were three storms showing more than one-half inch of precipitation.

The total wind movement was only about three-fourths of the normal and only a few days showed as much as a hundred miles. There were no gales.

The amount of bright sunshine was considerably less than usual and nearly one-half the days were either cloudy or overcast.

J. E. OSTRANDER, Meteorologist

E. H. WHEELER, Acting Observer.

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AMHERST, MASS.

BULLETIN No. 453. SEPTEMBER 1926

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.
Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.
Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.11, 27th, 9 A.
Minimum reduced to freezing,	29.50, 9th, 6 P.
Reduced maximum reading,	30.41, 27th, 9 A.
Reduced minimum reading,	29.79, 9th, 6 P.
Mean semi-daily reduced	30.143
Monthly range	0.62

Air Temperature. In Degrees Fahr.

Highest	87.0, 25th, 2 P.
Lowest	38.0, 27th, 4 A.
Mean hourly	59.3
Mean of means of max. and min.	59.8
Mean sensible (wet bulb)	55.0
Monthly range	49.0
Highest mean daily	74 8, 25th
Lowest mean daily	47.6, 27st
Mean maximum	71.6
Mean minimum	48.0
Mean daily range	23.6
Greatest daily range	40.5, 11th,
Least daily range	6.0, 5th

Humidity.

Mean dew point	51.9
Mean force of vapor	.478
Mean relative humidity	83.5

Precipitation. In inches.

Total precipitation, in inches	1.50
Number of days on which .01 inch or more rain fell	8

Wind.

Total movement	2416m
Greatest daily movement	202m, 26th
Least daily movement	9m, 28th
Mean daily movement	80m
Mean hourly velocity	3.3m

Maximum pressure per squarefoot, 3.5 lbs= 26m per hour, 26th, 8 A., N.

Maximum velocity for 5 minutes, 18m per hour, 26th, 2 A., N.W.

Prevailing direction, South Southwest

Summary.

South	20 per cent.
Soutn Southeast	13 " "
North	13 " "
West	13 " "
Other directions	41 " "

Weather.

Mean cloudiness observed	59 per cent
Total cloudiness recorded by the Sun Thermometer	214 hours = 57 per cent
Number of clear days	5
Number of fair days	12
Number of cloudy days	13

Bright Sunshine.

Number hours recorded. 159 = 43 per cent.

Rain, 2d, 5th, 6th, 9th, 13th, 16th, 17th, 23d 24th, 25th, 27th, 28th.

Thunder and Lightning, 9th, 25th.

Gales, None

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine.
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.04	29.89	29.973	75.5	3 P	39.5	7 A	57.5	59 8	57.5	11.1
2	30.10	29.91	30 056	63.0	0 A	51.0	12 M	57.0	55.5	51.0	0 0
3	30.25	30.10	30.155	73.0	3 P	44.0	6 A	58 5	58.0	53.7	10.9
4	30.31	30.26	30.305	71 0	2 P	43.0	6 A	57.0	57.5	54.3	7.0
5	30.33	30.18	30.258	58.0	0 A	52.0	12 P	55.0	54.8	54 0	0.0
6	30.18	29.97	30.054	63 0	12 P	51.0	4 A	57 0	56.2	56 5	0.0
7	30.17	29.97	30.109	73 0	3 P	52.0	12 P	62.5	64.3	61.0	10.0
8	30.23	30.07	30.153	79.0	4 P	46.0	6:30 A	62.5	61.2	56.7	11.1
9	30.07	29.79	29.904	73.5	3 P	54.5	5:30 A	64 0	65.1	62.5	1 8
10	30.11	29.83	30.029	75.0	4 P	55.0	12 P	64.0	63 8	55.7	10 5
11	30.15	30.07	30.119	82.0	3:30 P	41.5	6:30 A	61.7	60.0	53.5	9.1
12	30.10	29.88	29.986	76.5	2:30 P	45 0	6 A	60.7	60.7	53.7	7.0
13	30.18	29.83	30.022	68.5	3 P	44 0	12 P	56.3	59 5	52.3	9.2
14	30.33	30.18	30.300	69.5	4 P	38.5	6:30 A	54 0	52 4	49.3	7.5
15	30 38	30.27	30.334	73.5	3:30 P	40 0	6:30 A	56.7	55.8	49.7	10.1
16	30.27	30.02	30.123	81.0	4 P	49.5	2:30 A	65.3	63.2	58.3	7.8
17	30.28	30.05	30.199	65.0	3 P	57.0	12 P	61.0	60.5	57.7	0 0
18	30.33	31.17	30.257	75.0	2:30 P	50 0	6:30 A	62.5	60 8	56.7	2.0
19	30.17	30.02	30.097	81.0	5 P	46.5	6 A	63.7	61.0	54.5	6.8
20	30.02	29.86	29 969	86.0	4 P	48.0	5:30 A	67.0	64.8	60.0	6.2
21	30 20	30.02	30.162	77.5	4 P	51.5	6:30 A	64.5	61.4	51 5	8.7
22	30.20	30.01	30.120	74 0	3 P	48.0	5:30 A	61.0	60.4	56.5	2.0
23	30.24	30.05	30 194	66.0	12 M	56.0	12 P	61.0	61.0	58 0	0 0
24	30.20	29.94	30.033	78.0	5 P	56.0	0 A	67.0	66.0	63.7	0.0
25	30.02	29 83	29.923	87 0	2 P	63.0	12 P	75.0	74.8	72.5	6.3
26	30.32	29.96	34.279	65.0	4 P	40.0	12 P	52.5	54 1	44.3	7 9
27	30.41	30.30	30.367	57.0	3 P	38.0	4 A	47.5	47.6	44 0	0 6
28	30.32	30.24	30.335	54.5	5 P	46.0	6 A	50.3	49.9	47.7	0.3
29	30.26	30.15	30.229	60.0	3 P	47.0	5 A	53 5	52.8	50.7	1.2
30	30.24	30.18	30.245	69.0	3 P	49 0	6 A	59.0	55.8	52.7	4.1

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	54.0	.590	79.5	S.W.	102	2 5	22	5 P				
2	45.5	.435	72.0	N.	69	0.0	—	—	9 A	12 M	.01	
3	51.0	.476	79.0	N.E.	103	0.0	—	—				
4	52.5	.462	86.5	S.E.	61	0.0	—	—				
5	53.0	.428	95.5	S.S.E.	72	0.0	—	—	1 A	12 P	.38	
6	56.0	.478	97.0	E.	30	0.0	—	—	0 A	10 P	.41	
7	59.5	.579	88.0	N.W.	106	1.0	14	5 P				
8	54.5	.522	82.0	S.S.E.	45	0.0	—	—				
9	61.5	.622	89.0	S.S.E.	180	3.0	24	2 P	9 P	10 P	T	
10	52.5	.510	78 5	N.	146	1.0	14	10 A				
11	48.0	.468	80.5	S.	48	0.0	—	—				
12	45.5	.507	74.5	S.	103	1.5	17	3 P				
13	41.5	.493	66 0	N.	180	3.0	24	9 A	2 A	3 A	T	
14	44.0	.397	78 5	N.N.W.	50	0.0	—	—				
15	44.5	.402	82 5	S.	41	0 0	—	—				
16	52.5	.556	81.5	N.	62	0.0	—	—	11 P	12 P	.13	
17	54.5	.517	87.5	N.E.	77	0.0	—	—	7 A	9 A	T	
18	54.0	.512	85.5	S.W.	66	0.0	—	—				
19	52.5	.509	86.5	S.	31	0 0	—	—				
20	58.0	.586	88.5	W.	53	0.5	10	1 P				
21	48.0	.456	71.5	N.N.E.	175	2.5	22	10 A				
22	55.0	.604	88 5	S.S.E.	83	2 0	20	12 M				
23	56.5	.527	87.5	S.	60	0.0	—	—	1 P	7 P	T	
24	63.0	.636	91.5	S.	77	2.0	20	3 P	2 A	2 P	.30	
25	72.0	.838	93.0	S.S.W.	104	1.5	17	10 P	9 P	12 P	.11	
26	37.5	.359	63 5	N.N.E.	202	3.5	26	8 A				
27	41.5	.321	81 0	W.	39	0.0	—	—	10 P	12 P	.10	
28	45.5	.358	85.0	W.	9	0.0	—	—	0 A	4 A	.06	
29	50.0	.392	90.5	S.S.W.	14	0.0	—	—	8:30 A			
30	52.5	.418	94.0	W.	28	0.0	—	—	2:30 P			

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was marked by a very high relative humidity and a rather small precipitation. Considerable fog, much cloudiness and variable wind direction were also important features.

Some rather cool weather was noted early in the month and again the last week of the month. The warmest day was the 25th and the coldest only two days later on the 27th. The equinoctial period was passed without any storms of consequence. Frost threatened about the middle of the month and again near the close, but none was noted at the station. Very light frost was reported on the low ground in the vicinity but practically no damage was done.

The absence of frost for two weeks after the usual date, enabled the crops which were so backward early in the season, to mature without damage. The wind movement was very small and no gales of even moderate intensity were registered.

The mean barometer was very high and the range of pressure small. The mean temperature was two degrees below the normal and the maximum temperature was normal but occurred rather late in the month. The minimum temperature was fully five degrees higher than usual.

The mean dew point was two degrees below the normal and the relative humidity five per cent above the normal.

The total precipitation was but little more than one-third of the usual amount and there were no heavy storms.

The wind movement was nearly a thousand miles less than usual.

The amount of sunshine was much less than usual.

J. E. OSTRANDER, Meteorologist

W. H. PARKIN, Observer.

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AMHERST, MASS.

BULLETIN No. 454. OCTOBER 1926

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.17, 1st, 9 A.
Minimum reduced to freezing,	28.71, 25th, 11 A.
Reduced maximum reading,	30.47, 1st, 9 A.
Reduced minimum reading,	29.00, 25th, 11 A.
Mean semi-daily reduced	29.939
Monthly range	1.47

Air Temperature. In Degrees Fahr.

Highest	81.0, 5th, 2-30 P.
Lowest	24.0, 22d, 6-30 A. 28th, 7-30 A.
Mean hourly	48.0
Mean of means of max. and min.	47.8
Mean sensible (wet bulb)	43.6
Monthly range	57.0
Highest mean daily	70.7, 5th
Lowest mean daily	34.3, 20th
Mean maximum	59.8
Mean minimum	35.9
Mean daily range	23.8
Greatest daily range	39.0, 12th.
Least daily range	6.0, 20th

Humidity.

Mean dew point	40.1
Mean force of vapor	.333
Mean relative humidity	84.2

Precipitation. In inches.

Total precipitation, in inches	5.02
Total snow, in inches	Trace
Number of days on which .01 inch or more rain fell	10

Wind.

Total movement	3518m
Greatest daily movement	286m, 25th
Least daily movement	32m, 20th
Mean daily movement	113.5m
Mean hourly velocity	4.7m

Maximum pressure per squarefoot, 9.0 lbs = 42m per hour, 25th, 12 M., S.W.

Maximum velocity for 5 minutes, 32m per hour, 25th, 12 M., S.W.

Prevailing direction, West Southwest

Summary.

South	22 per cent.
West	16 " "
Northwest	13 " "
South Southwest	10 " "
Southwest	10 " "
North Northwest	10 " "
Other directions	19 " "

Weather.

Mean cloudiness observed	54 per cent
Total cloudiness recorded by the Sun Thermometer	205 hours = 60 per cent
Number of clear days	2
Number of fair days	15
Number of cloudy days	14

Bright Sunshine.

Number hours recorded, 136 = 40 per cent.

Rain. 2d, 4th, 5th, 7th, 10th, 13th, 17th, 18th, 19th, 20th, 24th, 25th, 30th, 31st.

Snow, 18th, 20th.

Frosts, 9th. 10th, 12th, 16th, 22d, 27th, 28th.

Gales. 42m, 25th, S. W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.47	30.28	30.439	67.0	4 P	39 0	6 A	53.0	52.1	47.5	8.9
2	30.36	29.95	30.110	63.5	7 P	46.0	7 A	54.7	56.3	55.5	0 0
3	30.18	29.95	30.085	76.0	3 P	48.0	12 P	62 0	63.0	56.0	8.8
4	30.26	30.10	30.199	77 5	4 P	42.0	5 A	59.7	60.5	55.0	7.9
5	30.10	29.79	29.943	81.0	2:30 P	63.0	1 A	72.0	70.7	67 2	5.7
6	29.79	29.63	29.670	72.0	5:30 A	54.0	12 P	63 0	64.9	63 0	1.3
7	29.96	29.67	29 852	61.5	11 A	43.0	12 P	52.3	51.7	47 3	4.8
8	30.03	29.96	29.961	56.0	2:30 P	34 0	6 A	45.0	44 7	40.0	3.1
9	30.05	30.03	30.048	55.0	2 P	33.0	6:30 A	44 0	44 0	39.5	4 6
10	30.03	29.82	29.919	47.0	3 P	28.0	6 A	37.5	39 4	36.5	0 0
11	29.98	29.83	29.914	62.0	3 P	32.0	7 A	47.0	46.0	40.5	6.0
12	30 08	29.93	30.051	72.0	3 P	33.0	7 A	52 5	52.2	45.7	9.6
13	30.08	29.88	29.980	67.0	1 P	37 5	7 A	52.3	53 5	49.0	3.6
14	30.07	29.93	29.999	70.5	2 P	42.0	6 A	56 3	54 7	48.5	7.8
15	30.08	29.87	29.935	57.0	12 M	40 0	7:30 A	48.5	48.1	40.3	8 4
16	30.09	29.78	29 860	59.0	3:30 P	25.0	6:30 A	42.0	43.8	39.3	8.0
17	29.78	29.53	29.596	55.0	12 M	36 0	12 P	45.5	48.9	47 3	0 0
18	29.81	29.70	29.767	43.0	12 P	30 0	6:30 A	36.5	37 7	40.7	0.0
19	30 03	29.69	29.956	51.5	4:30 P	30 0	10 P	40.7	41.1	36.0	5.0
20	30.04	29.63	29 836	37.0	3 P	31.0	0 A	34 0	34.3	33.5	0.0
21	29.97	29.62	29.797	43 0	4:30 P	29.0	12 P	36 0	36.4	34 7	0.2
22	30.00	29.80	29 907	57.0	2 P	24 0	6:30 A	40.5	41 6	35 7	6 8
23	30.11	29.87	30.032	62.5	1:30 P	35.0	12 P	48.7	49.2	42 7	5 6
24	34.14	29.41	29.816	48.0	12 P	26.0	7 A	37.0	36.8	36.5	0.0
25	29 63	29 00	29.374	69.5	12 M	41.0	12 P	55.3	53.7	50.0	1.8
26	29.94	29.63	29.838	50.5	3:30 P	30.0	7:30 A	40 3	39 2	33.3	6 4
27	30.10	29.94	30.055	58.0	3 P	25 0	8 A	41.5	37.3	31 0	8 0
28	30.21	30.03	30 145	59.0	4 P	24.0	7:30 A	41.5	40.9	35.3	8 4
29	30.13	29.99	30.044	64.0	2 P	43.0	0 A	53.5	51.7	46 7	2.2
30	30.23	29.92	30.063	55.5	12 M	33.0	7 A	44 3	47.7	43.5	3.1
31	29.95	29.85	29.914	55.0	0 A	36 0	12 P	45.5	46.7	44 0	0.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	46.0	.359	85.5	S.	58	0.5	10	12 P				
2	53.5	.625	89.5	S.	166	1.5	17	11 A	4 A	8 P	.10	
3	52.5	.413	72.5	N.W.	130	1.5	17	2 P				
4	54.0	.662	91.5	N.W.	67	1.0	14	7 P	10 P	12 P	T	
5	66.5	.717	89.5	S.	199	3.0	24	9 P	4 A	12 M	.81	
6	62.0	.480	93.5	S.	156	2.5	22	3 A				
7	44.5	.293	79.0	N.N.W.	82	1.0	14	5 P	11 A	12 M	T	
8	36.0	.284	77 5	N.W.	111	1.5	17	4 P				
9	35.0	.275	75.5	N.	165	3.0	24	12 M				
10	35.0	.237	84.0	S.S.W	45	0.0	—	—	10 A	12 M	.02	
11	38.0	.278	83.5	N.W.	90	1.5	17	7 A				
12	42.5	.401	75.5	S W.	49	0.0	—	—				
13	48.5	.377	96 0	S.	62	1.0	14	1 P	2 P	12 P	.21	
14	47.5	.368	91.0	S.	59	0.0	—	—				
15	38.5	.274	87.0	W.	169	3.0	24	1 P				
16	36.0	.277	77.5	S.S.W.	100	2.5	22	3 P				
17	46.5	.340	92 5	W.	148	5.5	33	6 P	6 A	12 P	1.00	
18	32.5	.186	80 0	S.E.	79	0.5	10	7 P	9 A	11 A	T	T
19	33.5	.226	87.0	N.E.	164	3 5	26	10 A	2 A	3 A	.08	
20	32.5	.196	95.5	N.N.E	32	0.0	—	—	9 A	11 P	.60	T
21	32.5	.216	84.5	N.	156	2 0	20	11 A				
22	32.0	256	76.0	S.	143	3.5	26	7 P				
23	39 5	.304	81.5	W.	135	0.5	10	2 P				
24	34.5	.236	89 0	N.N.W.	37	0.0	—	—	10 A	12 P	1.04	
25	47.5	.410	85 0	S.W.	286	9.0	42	1 P	0 A	1 P	.80	
26	29 0	.214	75.5	S.W.	186	1.5	17	0 A				
27	28 5	.103	84.0	N.E.	67	0.0	—	—				
28	32.0	.236	81.0	W.	75	0.0	—	—				
29	44.5	.360	80.5	W.	125	0.5	10	6 P				
30	41.0	.321	84.0	S.S.W.	43	0.5	10	4 P	1 P			T
31	41.5	.321	86 5	N.W.	134	1.0	14	7 P	10 A	9 P	.36	

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was more clondy than usual and a rather large precipation occurred. The first frost of the season occuared on the 9th, about three weeks later than usual, giving most crops ample opportunity to mature. On the 20th the average temperature was only two degrees above freezing. Later in the month the temperature was below the freezing point several times. The wind directions were much more variable than usual. On the 24th-25th the barometer fell more than an inch in 24 hours and the recovery of pressure was almost as rapid. On the 24th-25th the rainfall was nearly two inches.

Some of the more important features of the several weather elements are as follows : The mean barometer was very low for the time of year and the range of pressure unusually large. The total wind movement was much less than the normal and only one gale was registered.

The mean temperature wag slightly lower than the normal and the range about the usual amount. Early in the month an abnormally warm day occurred.

The mean dew-point and relative humidity were both lower than their normals.

The total precipitation was more than an inch greater than the normal, due to several rather heavy storms.

Only two days were classed as clear and the number of fair and cloudy days was about the same.

J. E. OSTRANDER, Meteorologist

W. H. PARKIN, Observer.

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Massachusetts Agricultural College,
AMHERST, MASS.

BULLETIN No. 455. NOVEMBER 1926

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.24, 14th, 9 A.
Minimum reduced to freezing,	29.05, 16th, 4 P.
Reduced maximum reading,	30.55, 14th, 9 A.
Reduced minimum reading,	29.34, 16th, 4 P.
Mean semi-daily reduced	30.110
Monthly range	1.21

Air Temperature. In Degrees Fahr.

Highest	69.0, 16th, 2 P.
Lowest	15.0, 12th, 7-30 A. 28th, 8 A.
Mean hourly	38.9
Mean of means of max. and min.	39.8
Mean sensible (wet bulb)	35.5
Monthly range	54 0
Highest mean daily	62.3, 16th
Lowest mean daily	24.5, 28th
Mean maximum	49.8
Mean minimum	30.0
Mean daily range	19.8
Greatest daily range	35.0, 10th
Least daily range	10.0, 23d

Humidity.

Mean dew point	31.8
Mean force of vapor	.238
Mean relative humidity	80.8

Precipitation. In inches.

Total precipitation, in inches	5.38
Total snow, in inches	¼
Number of days on which .01 inch or more rain fell	9

Wind.

Total movement	4608m
Greatest daily movement	441m, 16th
Least daily movement	21m, 16th
Mean daily movement	154m
Mean hourly velocity	6.4m

Maximum pressure per squarefoot, 19.0 lbs = 62m per hour, 16th, 2 P., S.

Maximum velocity for 5 minutes, 36m per hour, 16th, 2 P., S.

Prevailing direction, West

Summary.

South	20 per cent.
Northwest	17 " "
North Northwest	13 " "
Southwest	13 " "
West	10 " "
Other directions	27 " "

Weather.

Mean cloudiness observed	49 per cent
Total cloudiness recorded by the Sun Thermometer	209 hours = 70 per cent
Number of clear days	2
Number of fair days	9
Number of cloudy days	19

Bright Sunshine.

Number hours recorded. 89 = 30 per cent.

Rain. 2d, 5th, 9th, 10th, 16th, 18th, 19th, 23d, 26th, 27th, 30th,

Snow, 5th, 10th, 23d.

Frosts before the 16th, 5th, 6th, 12th,

Gales. 38m, 5th, S. W.; 40m, 10th, N W.; 36m 11th, N. W.; 62m, 16th, S.; 37m, 20th, W.; 49m, 24th, W.; 50m, 27th, N. W.; 35m, 29th, S.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine.
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.12	29.97	30.093	53 5	4 P	27 0	7 A	40.3	38.9	33.0	0.0
2	30.08	29 83	29.906	45.0	4 P	34.0	5 A	39.5	37.4	36.0	9.7
3	30.08	29.91	30.044	49 0	2 P	31.0	0 A	40 0	38.5	34.7	0.0
4	30.12	30.05	30.099	45 5	2:30 P	24.5	12 P	35.0	33.5	28.5	2.0
5	30.09	29.85	29 976	48 0	12:30 P	23.5	1 A	35.7	37.0	34.7	7.5
6	30 20	30.09	30 129	54.0	3 P	27.0	7 A	40 5	40.5	36.5	1.1
7	30.27	30.06	30.193	63.0	3 P	38.0	7 A	50.5	48 3	44 0	6.7
8	30.35	30.27	30.336	62.0	3:30 P	36.5	3 A	49.2	46 4	43.7	6.4
9	30.30	29.56	29 882	65.0	10:30 P	39.5	3 A	52 3	49.0	48.7	0 0
10	29 92	29.43	29 636	64.0	0 A	29 0	12 P	46.5	45.9	40.3	0 0
11	30.35	29.92	30 199	36 0	2 P	24 0	12 P	30.0	29.1	24.7	0.0
12	30.54	30.35	30.505	42.0	3 P	15.0	7:30 A	28 5	27 7	24.5	7.0
13	30 52	30 48	30.512	45.0	2:30 P	29 0	4 A	37 0	34.2	31.2	3.5
14	30 55	30.48	30 527	40 0	3 P	27.0	6 A	33.5	34.8	33.0	0 0
15	30 48	30.04	30.316	62 0	4 P	39.0	0 A	50.5	48.7	47 0	3 3
16	30 04	29.34	29 612	69 0	2 P	52 0	12 P	60 5	62.3	58.5	0 9
17	30.28	29.92	30.163	56.0	3 P	35 0	12 P	45.5	47.1	39 8	7.8
18	30.38	30.02	30 217	56 0	2 P	28 0	8 A	42.0	41.9	38.2	4.0
19	30.02	29.83	29 876	49.0	3 P	34 0	10 P	41.5	42.0	41.5	1.3
20	29.94	29.87	29.932	41.5	2 P	31.0	7 A	36.3	34 8	31.0	4.5
21	30.11	29.93	30.063	38 0	3 P	25.5	7 A	31.7	32.1	30.5	2.9
22	30.27	30.11	30.208	42 0	2:30 P	28.0	6 P	35 0	32.4	28.7	4.7
23	30.20	30.14	30 185	42 0	3 P	32.0	7 A	37.7	34.3	30.7	0.8
24	30.14	29.80	29.985	48.5	3:30 P	30 0	1 A	39.5	37.7	32.3	0.5
25	30 38	30.08	30.332	42.0	3 P	25 0	8 A	33.5	32.4	26 5	6 5
26	30 25	29.47	29.902	50.0	12 P	31.0	5 A	40.5	35.3	35.5	0.0
27	30.13	29 40	29.738	51.0	5 A	21.0	12 P	36 0	37.4	34 7	0.0
28	30.46	30.13	30.438	34.0	3:30 P	15 0	8 A	24 5	24 5	18.0	7.9
29	30.33	30.13	30.208	50.0	3 P	29.0	0 A	39 5	40 6	38 7	0.0
30	30.17	30.00	30.101	50.0	2:30 P	38.0	6 A	44 0	41.5	40.3	0 0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	30.5	.198	88.5	S.E.	73	0.0	—					
2	35.0	.219	91.5	S.	56	0.5	10	10 A	8 A	12 M	.16	
3	32.0	.214	84.0	N.W.N.	92	1.0	14	8 P				
4	24.0	.174	75.0	S.	168	1.0	14	4 P				
5	29.0	.230	70.5	W.N.W.	122	7.0	38	1 P	8 A	9 A	T	T
6	34.0	.233	86.0	S.	115	3.0	24	5 P				
7	41.5	.310	85.0	S.	185	3.0	24	2 P				
8	42.0	.312	88 5	N.N.W.	48	0.0	—	—				
9	50.5	.376	98.0	N.	44	5.0	32	9 P	8 A	12 P	1.54	
10	35.0	.314	70.5	N.W.	360	8.0	40	8 P	3 P	4 P	T	T
11	20.5	.148	77.0	N.W.	375	6.5	36	3 P				
12	20.0	.142	76.5	S.S.W.	74	0.0	—	—				
13	28.5	.185	85 5	W.	73	0.0	—	—				
14	29.5	.210	77.5	N.	21	0 0	—	—				
15	44.0	.365	87.0	N.E.	68	4.5	30	8 P				
16	57.0	.544	87.0	S.	441	19 0	62	2 P	8 A	12 P	.93	
17	36.0	.270	79 0	W.S.W.	235	1.5	17	10 A				
18	37.0	.252	96 0	S.E.	73	1.0	14	6 P	8 P	12 P	.05	
19	37.5	.244	91.0	N.N.W.	154	1.5	17	2 P	0 A	8 A	1.00	
20	24.5	.191	70.0	W.	186	7.0	37	2 P				
21	25.0	.180	73.0	W.	214	3 5	26	2 P				
22	23.0	.174	74.5	S.W.	147	2.0	20	3 A				
23	27 0	.188	78.0	N.W.	85	0.0	—	—	1 A	3 A	.02	$\frac{1}{4}$
24	26.0	.209	68 5	S.W.	202	12 0	49	9 P				
25	22.5	.156	81 0	S.W.	154	2.0	20	3 A				
26	34 0	.218	90 5	S.W.	30	3 0	24	11 P	10 A	12 P	1.17	
27	30 0	241	73.0	N.W.	322	12.5	50	12 M	0 A	9 A	.02	
28	2.5	.122	47.0	N.W.	152	2.0	20	10 P				
29	36.0	.257	82.0	S.	228	6.0	35	8 A				
30	39.5	.256	94.0	N.N.W.	102	3.5	26	1 P	3 A	11 A	.49	

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was unusually cloudy, especially during the mornings, and the rainfall was much above the normal. Several heavy rainstorms occurred and the ground water considerably increased. There was but little really low temperature and the ground was practically unfrozen throughout the month. There were three very marked fluctuations in barometer pressure, the fall and recovery of pressure both being unusually rapid. Several gales were recorded, some of considerable intensity. The month as a whole was seasonable and pleasant for the time of year.

The mean barometer was considerably above the normal and the range of pressure, while slightly less than usual, all occurred in about two days. The maximum and minimum barometer readings were not far from their normal values. The heavy gales marked the time of low barometer.

The total wind movement was about the usual amount while the wind direction was very changeable.

The mean temperature was nearly normal and the maximum about five degrees higher than usual, giving a rather larger range. Several rather rapid changes in temperature were noted.

The mean dew point and relative humidity were both well above their normals.

The total precipitation was about 60 per cent more than usual and most of it occurred during four heavy rainstorms. Much the greater part occurred during the latter part of the month.

The amount of sunshine was abnormally small, nearly two-thirds of the days being classed as cloudy.

J. E. OSTRANDER, Meteorologist

W. H. PARKIN, Observer.

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Massachusetts Agricultural College,
AMHERST, Mass.

BULLETIN No. 456. DECEMBER 1926

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.29, 5th, 1 A.
Minimum reduced to freezing,	29.19, 29th, 2 A.
Reduced maximum reading,	30.62, 5th, 1 A.
Reduced minimum reading,	29.50, 29th, 2 A.
Mean semi-daily reduced	30.095
Monthly range	1.12

Air Temperature. In Degrees Fahr.

Highest	43.0, 1st, 3 P.
Lowest	-10.0, 27th, 7 A.
Mean hourly	20.4
Mean of means of max. and min.	20.1
Mean sensible (wet bulb)	18.0
Monthly range	53 0
Highest mean daily	37.8, 1st
Lowest mean daily	5.6, 18th
Mean maximum	30.2
Mean minimum	10.0
Mean daily range	20.2
Greatest daily range	37.0, 27th
Least daily range	9.0, 5th

Humidity.

Mean dew point	14.5
Mean force of vapor	.114
Mean relative humidity	78.9

Precipitation. In inches.

Total precipitation, in inches	2.78
Total snow, in inches	22¼
Number of days on which .01 inch or more rain fell	10
Days of sleighing	27

Wind.

Total movement	3645m
Greatest daily movement	383m, 2d
Least daily movement	12m, 27th
Mean daily movement	117m
Mean hourly velocity	4.9m
Maximum pressure per square foot, 11.0 lbs = 47m per hour, 6th, 2 P., N.	
Maximum velocity for 5 minutes, 24m per hour, 6th, 2 P., N.	
Prevailing direction, West, Northwest	

Summary.

Northwest	22 per cent
West	16 " "
Southwest	16 " "
North	16 " "
South	13 " "
Other directions	17 " "

Weather.

Mean cloudiness observed	52 per cent
Total cloudiness recorded by the Sun Thermometer	153 hours = 54 per cent
Number of clear days	9
Number of fair days	10
Number of cloudy days	12

Bright Sunshine.

Number hours recorded. 130 = 46 per cent.

Rain, 8th, 24th, 28th.

Snow, 3d, 5th, 6th, 8th, 10th, 15th, 20th, 26th, 28th.

Gales. 36m, 1st, N. W.; 43m, 2d, W; 37m, 4th N.; 47m, 6th, N.; 35m, 17th, N. W.; 35m, 22th, N.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.00	29.74	29.813	43.0	3 P	30.0	12 P	36.5	37.8	35.0	0 0
2	30.21	29.81	30.095	30.0	0 A	10.0	12 P	20.0	19.8	15.2	7.5
3	30.30	29.95	30.168	26.0	6 P	8.0	6 A	17.0	16.0	15.8	7.0
4	30.60	29.93	30.248	30.0	12 M	2.0	12 P	16.0	18.1	13.7	4.5
5	30.62	29.95	30.349	11.0	12 P	2.0	0 A	6.5	6.1	7.7	0.0
6	30.48	29.95	30.296	25.0	1 P	6.0	12 P	15 5	15.8	13.3	6.4
7	30 59	30.20	30.450	23.0	12 P	-6.5	7 A	8.3	10.6	10.5	5.7
8	30.20	29.91	30.008	38.0	5 P	23.0	0 A	30.5	30.1	31.3	0.0
9	30.38	30.14	30.336	34.0	2:30 P	10.0	8 A	22.0	20.0	14.5	6.7
10	30.14	29.79	29.918	27.0	3 P	15.0	0 A	21.0	21.9	22.5	0 0
11	29.79	29.54	29.613	32.0	3 P	19 5	1 A	25.7	25.0	27.7	0.0
12	29.97	29.59	29.857	41.0	2:30 P	16.0	12 P	28.5	28.7	22.7	7.5
13	29.97	29.73	29.825	29.0	12 P	12.0	6 A	20.5	21.3	22.3	0.0
14	30.10	29.65	29.856	42.0	1:30 P	21.0	12 P	31.5	32.3	29.7	6.0
15	30.23	29.96	30.137	25.0	4:30 P	8.0	9 A	16.5	17.8	15.0	0.0
16	30.22	29.94	30.172	21.0	3 P	10.0	12 P	15.5	14.6	10.3	7.0
17	30.23	30 04	30 136	26.0	3 P	8.5	5:30 A	17.3	16.9	17.3	0.0
18	30.51	30.23	30.477	13.0	3 P	0.0	7 A	6.5	5.6	1.5	7.5
19	30.50	30.29	30.423	22.5	3 P	2.0	8 A	12.3	9.7	5.0	8.2
20	30.29	29.88	30.047	24.0	12 P	5.0	0 A	14.5	17.3	17.7	0.0
21	29.96	29.84	29.902	41.0	2:30 P	21.0	5 A	31.0	30 0	29.0	1.5
22	30.26	29.94	30.082	37.0	2 P	18.0	12 P	27.5	28.7	25.3	4.0
23	30.51	30.26	30.466	34.5	3 P	11.0	9 A	11.7	18.9	14.0	8 2
24	30.43	29.88	30.141	34.0	8 P	1.5	8 A	17.7	19.7	17.0	4.0
25	30.07	29.87	30.008	41.0	1 P	29.0	12 P	35.0	35.0	32.7	7.5
26	30.26	29.87	30 044	29.0	0 A	2.0	12 P	15.5	18.2	13.0	3 0
27	30 46	30.26	30.460	27 0	3 P	-10.0	7 A	8 5	6.3	-0.3	9.0
28	30.36	29.52	29.952	32.0	6 P	-3 0	4:30 A	14.5	17.2	19.0	0.0
29	29.93	29.50	29 749	36 0	2:30 P	19.0	12 P	27.5	29.7	26.5	5.0
30	30.05	29.93	30.034	31.0	2:30 P	5.5	7:30 A	18.3	19.2	12.5	7.3
31	29.98	29.76	29.892	32.0	3 P	14.5	6:30 A	23.3	23.0	20 0	6.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	32.5	.252	82.5	S.W.	103	6.5	36	10 P				
2	11.0	.097	77.5	N.W.	383	9.0	43	7 A				
3	12.5	.099	82.0	S.	122	1.5	17	8 P	7 P	10 P	.12	1½
4	12.0	.087	64.5	N.W.	182	7.0	37	3 P				
5	5.5	.066	62.0	N.	193	2.0	20	11 P	11 A	12 P	.50	S
6	9.5	.086	53.5	N.	300	11.0	47	2 P	0 A	3 A	.04	½
7	3.5	.078	77.0	W.	62	1.5	17	11 P				
8	29.0	.184	88.0	W.	221	4.0	28	3 P	5 A	10 A	.01	T
9	13.0	.193	62.5	S.S.W.	52	1.5	17	2 A				
10	21.0	.125	93.5	N.N.W.	60	0.0	—	—	5 A	12 P	.34	3½
11	23.0	.138	91.0	S.	25	1.0	14	10 A				
12	17.0	.134	72.5	S.W.	96	1.0	14	1 P				
13	21.5	.126	71.0	N.E.	19	0.0	—	—				
14	27.0	.174	86.0	N.W.	95	3.5	26	2 P				
15	13.0	.093	90.0	W.	36	0.0	—	—	5 P	12 P	.08	2
16	2.5	.078	66.5	N.W.	150	3.0	24	2 P				
17	12.5	.104	76.5	S.W.	156	6.0	35	10 P				
18	−5.5	.051	62.5	N.W.	266	4.0	28	10 P				
19	0.0	.060	76.5	N.W.	178	3.5	26	2 P				
20	16.0	.102	88.5	S.	51	1.5	17	11 A	5 A	11 P	.06	1¼
21	27.0	.162	90.0	S.W.	33	1.0	14	2 P				
22	20.5	.120	77.0	N.	153	3.5	26	5 P				
23	9.5	.089	76.0	N.	151	2.0	20	1 A				
24	13.5	.170	84.0	S.W.	97	2.5	22	4 P	3 P	9 P	.01	
25	29.0	.202	82.5	N.W.	148	3.5	26	6 A				
26	11.0	.085	89.0	N.	188	6.0	35	2 P	4 A	1 P	.55	4¾
27	−5.0	.050	77.0	W.	12	0.0	—	—				
28	17.0	.091	89.5	W.	13	0.0	—	—	7 A	11 P	1.07	1¼
29	23.5	.151	86.0	N.N.W.	22	1.0	14	1 P				
30	9.0	.086	82.0	W.N.W.	19	0.0	—	—				
31	17.0	.115	82.5	S.	59	0.0	—	—				

**Rain or melted snow at base of tower. * Included in following day.

Annual Summary for 1926.

Pressure. In inches.

Maximum reduced to freezing, ... 30.29, Dec. 5, 1 A.
Minimum reduced to freezing, ... 28.71, Oct. 25th, 11 A.
Maximum reduced to freezing and sea-level, ... 30.62, Dec. 5th, 1 A.
Minimum reduced to freezing and sea-level, ... 29.00, Oct. 25th, 11 A.
Mean semi-daily reduced to freezing and sea-level, ... 29.981
Annual range, ... 1.62

***Air Temperature.** In degrees Fahr.

Highest, ... 100.0, July 22d, 3 P.
Lowest, ... -10.0, Dec. 27th, 7 A.
Mean hourly, ... 45.0
Mean of means of max. and min., ... 45.2
Mean sensible (wet bulb), ... 41.3
Annual range, ... 110.0
Highest mean daily, ... 82.7, July 21st.
Lowest mean daily, ... 5.6, Dec. 18th.
Mean maximum, ... 55.9
Mean minimum, ... 34.5
Mean daily range, ... 21.4
Greatest daily range, ... 42.0, May 6th.
Least daily range, ... 4.0, Feb. 22nd.

Humidity.

Mean dew point, ... 37.5
Mean force of vapor, ...354
Mean relative humidity, ... 79.4

Wind.

Prevailing direction, ... West

Summary.

North . . . . . 10 per cent
West . . . . . 12 " "
South . . . . . 17 " "
Southwest . . . . . 10 " "
Northwest . . . . . 16 " "
Other directions, ... 35 " "
Total movement, ... 49,840 m
Greatest daily movement, . . . 441m., Nov. 16th
Least daily movement, ... 9 m., Sept. 28th
Mean daily movement, ... 137 m
Mean hourly velocity, ... 5.7 m
Maximum pressure per square foot, 19.0 lbs., = 62 m. per hour, Nov. 16th. S.
Maximum velocity for 5 minutes, 42 m. per hour, Jan. 29th, W. N. W.

Precipitation. In inches.

Total precipitation, rain or melted snow, . 40.92
Snow total in inches, ... 76
Number of days on which .01 or more rain or melted snow fell, ... 117

Weather.

Mean cloudiness observed, ... 51 per cent.
Total cloudiness recorded by Sun Thermometer, ... 2274 hrs.=51 per cent.
Number of clear days, ... 83
Number of fair days, ... 142
Number of cloudy days, ... 140

Bright Sunshine.

Number of hours recorded, 2188 hrs.=49 per cent

Dates of Frosts.

Last, ... May 6th
First, ... Sept. 24th

Dates of Snow.

Last, ... April 27th
First, ... Nov. 9th
Total days of sleighing, ... 77

Gales of 50 or More Miles Per Hour.

Jan. 22d, 57m, N.W., 28th, 51m, W.N.W.; 29th, 58m, W.N.W.
July 10th, 51m, N.W.; 22nd, 55m, N.W.
Nov. 16th, 62m, S.; 27th, 50m, N.W.

Temperature in ground shelter.

W. H. PARKIN
Observer.

J. E. OSTRANDER,
Meteorologist.

BULLETIN No. 457. JANUARY 1927

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.66, 27th, 9 A.
Minimum reduced to freezing,	28.99, 5th, 3 A.
Reduced maximum reading,	31.00, 27th, 9 A.
Reduced minimum reading,	29.30, 5th, 3 A.
Mean semi-daily reduced	30.126
Monthly range	1.70

Air Temperature. In Degrees Fahr.

Highest	47.0, 29th, 4:30 P.
Lowest	−12.0, 27th, 6 A.
Mean hourly	22.4
Mean of means of max. and min.	22.7
Mean sensible (wet bulb)	19.8
Monthly range	59.0
Highest mean daily	39.4, 29th
Lowest mean daily	1.9, 27th
Mean maximum	32.4
Mean minimum	13.0
Mean daily range	19.4
Greatest daily range	37.0, 26th
Least daily range	3.0, 21st

Humidity.

Mean dew point	17.0
Mean force of vapor	.128
Mean relative humidity	85.3

Precipitation. In inches.

Total precipitation, in inches	2.50
Total snow, in inches	11
Number of days on which .01 inch or more rain fell	14
Days of sleighing	31

Wind.

Total movement	4618m
Greatest daily movement	353m, 7th
Least daily movement	22m, 3d
Mean daily movement	149m
Mean hourly velocity	6.2m

Maximum pressure per square foot, 13.0 lbs = 51m per hour, 31st, 3 P., W. N.W.

Maximum velocity for 5 minutes, m 30per hour, 26th, 5 A., W.

Prevailing direction, West, Northwest

Summary.

North	23 per cent
Northwest	16 " "
West Northwest	13 " "
South	13 " "
South Southwest	10 " "
Other directions	25 " "

Weather.

Mean cloudiness observed	55 per cent
Total cloudiness recorded by the Sun Thermometer	174 hours = 59 per cent
Number of clear days	8
Number of fair days	9
Number of cloudy days	14

Bright Sunshine.

Number hours recorded. 123 = 41 per cent.

Rain. 4th, 15th, 18th, 19th, 20th, 21st, 22nd, 28th, 29th, 30th.

Snow, 1st, 4th, 11th, 15th, 16th, 18th, 23d, 28th.

Gales. 35m, 5th, W.N.W.; 42m, 6th, W.N.W.; 41m. 11th, N.; 50m, 15th, N.; 45m, 16th, N. W.; 45m, 26th, W.; 51m, 31st W. N. W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	29.76	29.69	29.734	34.5	3 P	22.0	12 P	28.3	27.3	25.5	4.4
2	29.81	29.67	29.728	32.0	3 P	15.5	8 A	32.7	20.4	17.3	6.9
3	29.85	29.72	29.808	27.0	3 P	8.0	11 P	17.5	15.1	10.5	5.6
4	29.85	29.32	29.542	34.0	9 P	9.0	0 A	21.5	22.0	25.5	0.0
5	29.41	29.30	29.362	37.0	2 P	24.0	12 P	30.5	31.7	21.0	2 8
6	29.60	29.38	29.490	28.0	10 P	20.0	10 A	24.0	24.3	22.5	3 9
7	30.19	29 60	30.030	23.0	3 P	7.0	12 P	15.0	17.8	13.3	8.0
8	30.31	30.19	30.287	25.0	3 P	−2.0	7 A	11.5	11.3	6.7	8.1
9	30.25	30.05	30.169	22.0	3 P	−5.0	8 A	8.5	7.4	8.3	8.0
10	30.10	30 04	30 139	23.0	4 P	3.5	8:30 A	13.3	10.5	6.0	8.1
11	30.04	29.90	29.983	25.0	8 P	8.0	0 A	16.5	19.1	20.7	0.0
12	30.64	30.04	30.494	29 0	3:30 P	6.0	2 P	17.5	17.0	11.3	8.5
13	30.66	30.37	30.576	34.0	4 P	−1.0	7 A	16.5	17.5	14.7	0.1
14	30.37	29.98	30.165	40.0	2 P	30.0	0 A	35.0	35.3	35.5	0 0
15	29.98	29.73	29.854	33.0	0 A	10.0	12 P	21.5	20.2	17.5	0 0
16	30.12	29.74	29.978	18.0	4 P	6 0	8 A	12.0	10.2	5.3	7.1
17	30 23	30.12	30.196	27.0	4 P	9.0	12 P	18.0	16 9	14.3	1.8
18	30.39	30.23	30.391	39.0	3 P	7.0	1 A	23.0	24.9	24.3	4.3
19	30.36	30.09	30.201	44.0	5 P	30.0	3 A	37.0	35.8	36.0	0.0
20	30.40	30.12	30.344	41.0	0 A	34.0	9 A	37.5	37 4	37.5	0.0
21	30.42	30 28	30.394	37.0	12 M	34.0	12 P	35.5	35.3	35.0	0.0
22	30.41	30.10	30 239	42.0	4 P	30.0	12 P	36.0	35 9	35.5	0.0
23	30.59	30.25	30.440	30.0	0 A	18 0	9 A	24.0	21.5	20.3	0.0
24	30.36	30.24	30.303	34.0	4 P	9.0	8:30 A	21.5	20.2	13.7	7.2
25	30.28	30.12	30.200	38.0	3 P	5.0	8 A	21 5	22 0	15.3	8.7
26	30.84	30.12	30.609	30.0	3:30 A	−7.0	12 P	11.5	10.0	3.5	8.4
27	31.00	30.71	30.901	18.5	3:30 P	−12.0	6 A	3.3	1.9	−1.3	8.8
28	30 71	30.18	30.469	35 0	12 P	2.0	3 A	18.5	20.0	19.5	1.2
29	30.18	30.01	30.046	47.0	4:30 P	30.0	12 P	38.5	39 4	35.7	4.1
30	30.01	29.63	29.778	39 0	6 P	28.0	2:30 A	33.5	34.4	35.0	0.0
31	30.22	29.73	30.055	37.0	3 A	26.0	12 P	31.5	31.6	27.5	6.5

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	23.5	.144	88.5	N.N.W.	72	2.5	22	11 P	8 A	1 P	.25	2
2	13.5	.104	82.0	N.W.	162	2.0	20	7 A				
3	7.0	.076	81.0	S.E.	22	0.0	—	—				
4	24.3	.144	95.5	N.E.	29	1.0	14	8 P	10 A	10 P	.40	3
5	25.5	.176	80.5	W.N.W.	178	6.0	35	3 P				
6	19.5	.138	81.0	W.N.W.	330	9.0	42	9 P				
7	10.0	.086	82.5	N.W.	353	5.5	33	1 A				
8	6.5	.065	83 0	N.	112	2.0	20	9 P				
9	−4.0	.055	72.5	N.	72	1.5	17	4 P				
10	3.5	.061	86.5	N.	132	1.0	14	12 M				
11	18.5	.119	86.5	N.	309	8.5	41	1 P	7 A	6 P	.05	¾
12	6.5	.079	76.0	N.W.	192	0.0	—	—				
13	10.0	.112	76 5	S.	82	3.5	26	7 P				
14	35.5	.210	98.0	S.W.	115	1.5	17	7 A	5 A	7 P	.33	
15	15.5	.103	91.5	N.	346	12.5	50	3 P	7 A	12 P	.19	2
16	1.5	.060	81.5	N.W.	342	10.0	45	3 P	0 A	6 A	.08	1
17	11.5	.088	86 5	S.S.W.	66	0.0	—	—				
18	20.5	.149	80 5	S.	29	0.0	—	—	9 P	12 P	.12	1
19	32.5	.245	89.0	S.	98	4.0	28	10 P	8 P	9 P	T	
20	37.5	.223	100.0	S.	111	2.0	20	0 A	1 P	12 P	.34	
21	34.5	.203	100.0	N.N E.	50	0.0	—	—	0 A	12 P	.18	
22	33.5	.215	87.5	N.W.	110	4.0	28	9 P	0 A	8 A	.02	
23	19 0	.113	93.0	N.	195	3 0	24	5 A	1 P	10 P	.22	2
24	11.0	.087	86 5	W.	24	0.0	—	—				
25	11.0	108	76.5	W.S.W.	82	1.0	14	4 P				
26	−2 0	.058	74.5	N.	267	10.0	45	2 A				
27	−6.0	047	76.0	W.N.W.	33	0.0	—	—				
28	18.0	.119	94.5	S.S.W.	122	4.5	30	12 M	2 P	12 P	.07	T
29	34.0	.222	89.0	S.W.	116	3.0	24	6 A	0 A	5 A	.07	
30	34.0	.208	95.5	S.S W.	159	4.0	28	1 P	10 P	2 P	.18	
31	22.5	.165	74.0	W.N.W.	308	13.0	51	3 P				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The most interesting feature of the weather, from a meteorological standpoint, that was noted for the month, was the high barometer on the 27th. This record of 31.00 inches was the highest registered here since 1889, when the station was established. The minimum temperature for the Winter, so far, occurred at this time. The mean temperature, while higher than that of the preceding month, was considerably below normal, making the season, so far, one of marked severity.

Sleighing continued throughout the month although it was considerably impaired by a thaw near the close of the month.

The records of the several weather elements, compared with their respective normals show the following features of interest: The mean pressure was very high and the range of pressure unusually large, owing to the high barometer referred to above. The total wind movement was less than usual although several gales of moderate intensity were registered.

The mean temperature was about two and one-half degrees below the normal and the maximum and minimum temperatures were both considerably lower than usual. The thermometer registered below zero on five different dates. The coldest day, the 27th, averaged but little above zero for the whole day.

The mean dew point was nearly normal while the relative humidity was very high.

The total precipitation was about an inch less than usual and nearly one-half occurred as snow. No storms of much intensity were noted.

The month was more cloudy than usual.

J. E. OSTRANDER, Meteorologist

W. H. PARKIN, Observer.

BULLETIN No. 458. FEBRUARY 1927

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

LIBRARY OF THE
Massachusetts Agricultural
AMHERST, MASS

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.12, 5th, 10 A
Minimum reduced to freezing,	29.08, 3d, 12 P.
Reduced maximum reading,	30.45, 5th, 10 A.
Reduced minimum reading,	29.39, 3d, 12 P.
Mean semi-daily reduced	30.040
Monthly range	1.06

Air Temperature. In Degrees Fahr.

Highest	55.0, 24th, 4:30 P.
Lowest	7.0, 5th, 6 A.
Mean hourly	28.2
Mean of means of max. and min.	28.7
Mean sensible (wet bulb)	26.3
Monthly range	48.0
Highest mean daily	37.5, 24th
Lowest mean daily	13.9, 5th
Mean maximum	36.3
Mean minimum	21.0
Mean daily range	15.3
Greatest daily range	28.0, 24th.
Least daily range	5.5, 17th

Humidity.

Mean dew point	23.3
Mean force of vapor	.155
Mean relative humidity	85.3

Precipitation. In inches.

Total precipitation, in inches	2.62
Total snow, in inches	12
Number of days on which .01 inch or more rain fell	10
Days of sleighing	26

Wind.

Total movement	4366m
Greatest daily movement	506m, 4th
Least daily movement	22m, 24th
Mean daily movement	156m
Mean hourly velocity	6.5m

Maximum pressure per square foot, 45.0 lbs = 95m per hour, 3rd, 9 P., S. S. W.

Maximum velocity for 5 minutes, m 42per hour, 4th, 1 A., W.

Prevailing direction, West

Summary.

North	21 per cent
West	18 " "
West Northwest	18 " "
Southwest	11 " "
Other directions	32 " "

Weather.

Mean cloudiness observed	66 per cent
Total cloudiness recorded by the Sun Thermometer	186 hours = 63 per cent
Number of clear days	2
Number of fair days	14
Number of cloudy days	12

Bright Sunshine.

Number hours recorded. 110 = 37 per cent.

Rain, 3d, 16th, 18th, 25th, 26th.

Snow, 11th, 13th, 14th, 16th, 19th, 20th, 21st, 25th.

Gales, 49m, 2d, W.N.W.; 95m, 3d, S. S. W.; 57m, 4th, W.; 30m, 7th, W.N.W.; 41m, 12th, W.; 37m, 17th, N. W.; 44m, 18th, N.; 37m, 19th, N.E.; 57m, 20st N. E.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean, Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.38	29.99	30.257	34.0	1 P	25.0	6 A	29.5	29.3	28.0	2.8
2	30.19	29.82	30.004	40.0	9 A	25.0	12 P	32.5	33.0	31.3	7.0
3	30.24	29.39	29 859	41.0	12 P	19.0	6 A	30.0	30.3	30.3	3.0
4	30.30	29.39	30.105	43.0	1 A	16.0	12 P	29.5	25.7	24.5	8.7
5	30.45	30.30	30.384	20.0	4 P	7.0	6 A	13.5	13.9	11.7	5 7
6	30.29	29.77	29.928	23 0	12 P	12.0	7 A	17.5	17.2	16.8	0 0
7	30.27	29 77	30.069	40.0	10:30 A	22.0	12 P	31.0	31.5	31.0	4.9
8	30.35	30.22	30.290	41.5	3 P	18.0	7:30 A	29.7	28.5	24.5	3.8
9	30.37	30.16	30.287	41.0	3 P	21.0	5 A	31.0	31.6	27.7	5.6
10	30.16	30 03	30.084	39.5	2 P	27.0	12 P	33.3	33 1	33.3	6.0
11	30.15	30.06	30.118	35.0	3 P	21.0	8 A	28.0	25.9	22.7	5.8
12	30.20	29.98	30.065	40 0	1 P	22.0	1 A	32.0	28.6	25.0	3.7
13	30.38	30.20	30.309	31.0	3 P	16.0	8 A	23.5	25.1	20.7	3.8
14	30.22	29.80	29.970	31.0	2 P	23.0	7:30 A	27.0	27.0	26.5	0 0
15	30.15	29.85	29.988	40.0	3 P	26 0	6:30 A	33 0	30.9	29.2	4 7
16	30.21	29.83	30.066	38.0	2 P	18.0	8 A	28.0	29.6	24.2	5.3
17	29.95	29.79	29.879	38.0	3 P	32.5	1 A	35.3	34.8	34.5	0.0
18	30 06	29.87	29.943	37.0	3 P	30.0	12 P	33 5	33.5	34.0	0.0
19	30.39	30.04	30.306	25.0	3:30 P	17.0	7 A	21.0	21.4	20.3	0.0
20	30.37	29.97	30.184	17.0	4 P	11.0	8 A	14.0	14.4	13.2	0.0
21	29 97	29.77	29.830	26 0	5 P	12.5	0 A	19.2	18 7	20.3	2.3
22	29.97	29.81	29.940	34.5	5 P	15 5	0 A	25.0	25 7	25.0	7.7
23	29.95	29 76	29.818	48.0	3 P	28.0	0 A	38.0	37.2	34.5	5.0
24	29.99	29.79	29 927	55.0	4:30 P	27.0	7 A	41.0	37.5	31.0	7.8
25	30.05	29.80	29.989	48.0	2 P	26.0	2:30 A	37 0	34.8	31.8	6.4
26	29.80	29.44	29 502	37.5	11 A	30.0	12 P	33.7	33.8	33.0	0.5
27	30.01	29.54	29.801	33.0	3:30 P	23.0	12 P	28.0	28.6	27.7	0.0
28	30.29	30.01	30.186	40.0	2 P	16.5	7 A	28.3	28.1	23.7	9.9

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	25.0	.162	83.5	W.	168	3.0	24	10 P				
2	27.0	.202	75.0	W.N.W.	340	12.0	49	1 P				
3	28.0	.185	87.5	S.	234	45.0	95	9 P	4 P	7 P	.02	
4	20.0	.146	76.0	W.N.W.	506	16.5	57	1 A				
5	7.0	.082	76.0	N.	137	1.5	17	5 P				
6	16.5	.096	100.0	N.	43	0.0	—	—				
7	27.5	.190	81.5	W.	184	7.5	39	7 A				
8	22.5	.148	81.5	S.W.	46	0.5	10	2 P				
9	25.5	.164	84 5	W.	33	0.5	10	2 P				
10	22.5	.182	65.5	W.N.W.	129	3.5	26	12 M				
11	20.0	.139	86.0	W.	76	0.0	—	—	7 A	11 A	.02	½
12	19.5	.150	72.0	W.	251	8.5	41	5 P				
13	16.5	.122	81.5	N.W.	87	1.0	14	1 A	9 P	12 P	.12	1
14	25.5	.146	97.5	N.	84	1.5	17	2 P	0 A	10 P	.72	5
15	27.5	.167	92.0	N.W.	120	7.0	37	3 P				
16	23.0	.148	90 0	S.S.W.	115	2 5	22	4 P	3 P	10 P	.24	1¼
17	32.5	.203	95.0	N.	94	0.5	10	12 M				
18	32.5	.200	93 0	E.S E.	75	9.5	44	11 P	9:30 A	1:30 P	.03	2
19	16.5	.116	83 0	N.N.E.	347	7.0	37	10 P	1 A	11 A	.18	1½
20	11.5	.082	91.0	N.	354	16.0	57	1 A	0 A	6 P	.42	2¼
21	19.5	.110	97.0	S.S.W.	153	3.0	24	2 A	7 A	11 A	.01	T
22	22.5	.140	88.0	W.N.W.	124	2 0	20	1 A				
23	33 5	.205	93.5	E.	49	0.0	—	—				
24	28.0	.188	85.0	S.W.	22	0.0	—	—				
25	30 5	.181	95 0	E.	60	1.5	17	9 P	8:30 P		.40	1
26	30.5	.196	83.5	S.W.	197	4.0	28	2 A	0 A		.46	
27	25.0	.156	86.5	W.N.W.	222	3.5	26	7 P				
28	17.5	.145	68.5	N.	116	1.0	14	3 P				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather for the month was less severe than that of January and in many respects more seasonable. The temperature kept well above zero and the daily ranges were comparatively small. The precipitation during the first part of the month was very small. The first few days were very windy and numerous gales were recorded on the pressure chart. Some of marked severity. The total wind movement on the 4th, of more than five hundred miles, is a very unusual record for this station.

The records of the several weather elements show the following features of interest: The mean barometer was practically normal while the range of pressure was only about two-thirds of the usual amount. The maximum barometer was unusually low for the time of year. The wind direction was quite variable with less than usual from the northwest quadrant.

The mean temperature was about four degrees higher than the normal and the minimum temperature was more than fifteen degrees higher than the average value for this record. Only four days had an average temperature below twenty degrees.

The mean dew point was very high and the relative humidity about seven per cent more than normal.

The total precipitation was about eighty per cent of the normal. A moderate amount occurring as snow. Sleighing continued through nearly the whole month.

The amount of cloudiness was much greater than usual.

J. E. OSTRANDER, Meteorologist

W. H. PARKIN, Observer.

[illegible] OF THE
Massachusetts
Amherst, Mass.

BULLETIN No. 459. MARCH, 1927

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.18, 12th, 8 A
Minimum reduced to freezing,	29.09, 8th, 11 A.
Reduced maximum reading,	30.49, 12th, 8 A.
Reduced minimum reading,	29.40, 8th, 11 A.
Mean semi-daily reduced	30.103
Monthly range	1.09

Air Temperature. In Degrees Fahr.

Highest	74.0, 17th, 4 P.
Lowest	6.0, 2d, 6 A.
Mean hourly	37.7
Mean of means of max. and min.	38.5
Mean sensible (wet bulb)	33.5
Monthly range	68.0
Highest mean daily	52.0, 18th
Lowest mean daily	19.0, 3d
Mean maximum	49.9
Mean minimum	26.9
Mean daily range	23.0
Greatest daily range	45.0, 17th
Least daily range	5.0, 21st

Humidity.

Mean dew point	28.1
Mean force of vapor	.225
Mean relative humidity	75.2

Precipitation. In inches.

Total precipitation, in inches	1.96
Total snow, in inches	2½
Number of days on which .01 inch or more rain fell	9
Days of sleighing	none

Wind.

Total movement	4483m
Greatest daily movement	505m, 3rd
Least daily movement	34m, 16th
Mean daily movement	145m
Mean hourly velocity	6m

Maximum pressure per square foot, 20.0 lbs = 63m per hour, 3rd, 10 A., N.

Maximum velocity for 5 minutes, 36m per hour, 3d, 10 A., N.

Prevailing direction, West Northwest

Summary.

Northwest	19 per cent
West	13 " "
Southwest	13 " "
South	13 " "
North	13 " "
Northeast	10 " "
Other directions	19 " "

Weather.

Mean cloudiness observed	46 per cent
Total cloudiness recorded by the Sun Thermometer	182 hours = 49 per cent
Number of clear days	10
Number of fair days	10
Number of cloudy days	11

Bright Sunshine.

Number hours recorded. 188 = 51 per cent.

Rain. 6th, 8th, 18th, 20th, 21st, 26th, 27th, 30th, 31st.

Snow, 20th, 26th, 27th.

Gales. 49m, 2d, N.; 63m, 3d, N.; 53m, 8th, W.; 45m, 9th, W.N.W.; 39m, 30th, S.; 41m, 31st, W.N.W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine.
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.35	30.12	30.262	34.0	3 P	15.0	7 A	24.5	23.3	20.3	9.5
2	30.12	29.85	29.951	35.0	3 P	6.0	6 A	20.5	20.9	17.0	9.3
3	29.95	29.81	29.892	26.0	1 P	14.0	7 A	20.0	19.0	15.3	9.4
4	30.14	29.94	30.055	34.0	3 P	13.0	7 A	23.5	22.8	18.7	9.8
5	30.22	30.10	30.168	45.0	3 P	10.0	7 A	27.5	29.5	36.5	2 1
6	30.10	29.89	30 040	44 0	2:30 P	31.5	7 A	37.7	37.5	36.0	0 0
7	30.03	29 86	29 988	44.0	4 P	34.0	7 A	39.0	37.8	36.0	0.1
8	29.86	29.40	29.586	46.5	1 P	35 0	9 A	40.7	39.3	37.0	0.0
9	30.11	29.65	29.979	42.0	4 P	28 0	12 P	35.0	36.1	30.8	7.7
10	30.42	30.11	30.332	51.0	3 P	20.0	7 A	35.5	33.7	27.5	10.3
11	30.46	30.42	30.464	61.0	4 P	21.5	7 A	41.3	40.7	33.5	9.3
12	30.49	30.37	30.444	62 0	5 P	27.0	7 A	44.5	42.6	36.5	6.5
13	30.39	30.17	30.289	68.0	3 P	39.0	5 A	53.5	51.3	46.8	6.8
14	30.17	29.84	29.976	62.5	2 P	43 0	12 P	52.7	51.0	48.0	2.1
15	30.19	29.94	30.163	59.0	4 P	37.0	12 P	48.0	46.4	40.8	9 9
16	30.20	30.10	30.162	69.0	5 P	28.0	7 A	48.5	46.8	36.8	10 0
17	30.21	30.05	30.142	74.0	4 P	29.0	7 A	51.5	50.4	41.7	9.1
18	30.13	29.89	30.022	62.0	3 P	42.0	7 A	52.0	52.0	48.7	2.5
19	30.19	30.08	30.147	66.0	2:30 P	36.0	7 A	51.0	51.7	42.5	8.1
20	30.25	30.09	30.212	52.0	1 P	32.0	12 P	42.0	41.3	33.7	6.0
21	30.09	29.70	29.739	37.0	8 P	32.0	0 A	34.5	34.3	34.5	0.0
22	30.14	29.66	29.858	43.0	5 P	26 0	12 P	34.5	34.8	30.0	2.2
23	30.35	30.14	30.234	44.0	4 P	18.0	6:30 A	31.0	29.0	25.5	9.9
24	30.36	30.20	30.298	36.0	4 P	22.0	5 A	29.0	29.8	26.7	1.8
25	30.20	30 01	30 089	47.0	5 P	28.0	6 A	37 5	35 2	29.3	8.9
26	30.05	29.85	29 948	51.5	2 P	25.0	6 A	38.3	36.7	32.7	7.5
27	30.18	29.87	30.074	43.0	5 P	31.0	7 A	37.0	36.3	36.5	2.1
28	30.26	30.18	30.246	53.5	2:30 P	27.0	6:30 A	40.3	38.3	33.3	7.1
29	30.35	30.28	30.330	53.0	2 P	25.0	6 A	39.0	37.7	34.7	9.0
30	30.34	29.91	30.135	52.0	3 P	26.0	6:30 A	39.0	39.4	34.0	1.9
31	30.04	29.85	29.967	51.0	3 P	35.0	12 P	43.0	43.0	37.7	9.2

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	16.5	.118	79.5	N.W.	129	1.0	14	4 P				
2	10.5	.112	70.5	N.	151	12.0	49	9 P				
3	10.5	.094	76.5	N.	505	20.0	63	10 A				
4	9.5	.117	61.0	N.W.	255	4 0	28	11 A				
5	19.5	.171	67.0	S.W.	49	0.5	10	10 A				
6	35.0	.216	93.5	S.W.	39	0.5	10	6 P	5 P	9 P	.04	
7	35.0	.218	93.5	S.	44	0.0	—	—				
8	35.0	.233	88.0	W.	112	14.5	53	12 M	0 A	10 A	.55	
9	25.0	.195	69 0	W.N.W.	361	10.0	45	1 A				
10	24.0	.163	81.0	N.	86	0.5	10	1 P				
11	28.5	.232	73.5	S.S.W.	110	4.5	30	3 P				
12	31.5	.269	71.5	S.S.W.	70	2.0	20	10 P				
13	40.0	.358	83.5	S S.W.	178	5.5	33	5 P				
14	46.5	.354	90.5	S.W.	160	4.0	28	2 P				
15	32.5	.302	65.5	N.W.	203	2.5	22	10 A				
16	28.5	.289	57.0	W.	34	0.0	—	—				
17	35.0	.358	64.5	S.S.W.	44	0.0	—	—				
18	47.5	.301	91 5	S.W.	61	1.0	14	3 P	1 A	12 P	.06	
19	32.0	.354	53 5	N W.	99	2.5	22	1 A				
20	28.5	.219	75.0	N.E.	91	1.0	14	5 A	3 P	12 P	.14	1
21	34.0	.205	95.5	E.N.E.	37	0.0	—	—	0 A	12 P	1.02	
22	23.5	.193	65.0	N.	174	4.5	30	4 P				
23	23 0	.146	85.5	N.E.	175	2.5	22	11 A				
24	20.5	.159	70.5	N.E.	151	2.0	20	10 A				
25	21.5	.189	62 0	N.N E.	272	5.0	32	9 A			.42	
26	23.0	.229	55.5	W.	109	1.5	17	7 P	9 A	12 P	.06	1
27	33.5	.228	85.0	N.W.	88	0.0	—	—	0 A	8 P	.04	$\frac{1}{2}$
28	29.0	.214	77.5	N.W.	77	4.0	28	5 P				
29	29.5	.194	77.5	W.N.W.	82	2.0	20	4 P				
30	32.5	.206	87.5	S.	180	7.5	39	5 P	5 A	12 P	.04	
31	31.0	.270	65.5	W.	357	8.5	41	8 A	0 A	5 A	.01	

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The transition from winter to spring began early in the month, and by the end of the month was practically complete. The frost was mostly out of the ground on the equinoctial date and some plowing was done the last week of the month.

The warmest part of the month was the middle third when summer heat was registered on several days. The snow disappeared rapidly without causing extreme high water, partially due to the lack of precipitation during the period. At the close of the month the season was fully two weeks ahead of normal and progressing rapidly.

The mean barometer was considerably above the normal and the range rather small for the time of year. Fluctuations of pressure were less marked than usual and the wind movement was about a thousand miles less than the normal. The wind direction was more variable than usual.

The mean temperature was nearly four degrees above the normal and the maximum temperature about twelve degrees higher than the average value for this feature. The minimum temperature was practically normal and occurred about the first of the month. The range of temperature was extremely large even for this time of year.

The mean dew point was rather high and the relative humidity nearly normal.

The total precipitation was about one-half the average amount for March and nearly all of it was rain. A single storm at the equinox furnished more than one-half the total.

The wind movement on the 3rd was exceptionally large for this station.

The sunshine record was not far from the average value.

J. E. OSTRANDER, Meteorologist

W. H. PARKIN, Observer.

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AMHERST, MASS.

BULLETIN No. 460. APRIL, 1927

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing	30.15, 15th, 8 A
Minimum reduced to freezing	29.15, 29th, 6 A.
Reduced maximum reading	30.46, 15th, 8 A.
Reduced minimum reading	29.46, 29th, 6 A.
Mean semi-daily reduced	30.057
Monthly range	1.00

Air Temperature. In Degrees Fahr.

Highest	85.0, 20th, 1 P.
Lowest	22.0, 4th, 6 A.; 5th, 6 A.
Mean hourly	45.4
Mean of means of max. and min.	45.0
Mean sensible (wet bulb)	39.2
Monthly range	63 0
Highest mean daily	64.4, 20th
Lowest mean daily	31.7, 5th
Mean maximum	58.0
Mean minimum	32.0
Mean daily range	26.0
Greatest daily range	44.0, 16th
Least daily range	15.0, 10th

Humidity.

Mean dew point	33.3
Mean force of vapor	.296
Mean relative humidity	68.7

Precipitation. In inches.

Total precipitation, in inches	1.60
Total snow, in inches	2
Number of days on which .01 inch or more rain fell	7

Wind.

Total movement	5374m
Greatest daily movement	404m, 7th
Least daily movement	67m, 30th
Mean daily movement	179m
Mean hourly velocity	7.5m

Maximum pressure per square foot, 16.0 lbs = 57m per hour, 11th, 2 P., N.N.W.

Maximum velocity for 5 minutes, 30m per hour, 7th, 3 P., N.W.

Prevailing direction, West Northwest

Summary.

North	13 per cent
South	13 " "
West Northwest	13 " "
Northwest	23 " "
North Northwest	10 " "
Other directions	28 " "

Weather.

Mean cloudiness observed	34 per cent
Total cloudiness recorded by the Sun Thermometer	194 hours = 48 per cent
Number of clear days	4
Number of fair days	17
Number of cloudy days	9

Bright Sunshine.

Number hours recorded. 208 = 52 per cent.

Rain, 2d, 5th, 6th, 16th, 17th, 21st, 22d, 23d, 25th, 26th, 27th,

Snow, 2d, 5th.

Thunder and Lightning, 21st, 22d.

Frosts, after the 15th, 25th, 26th.

Gales, 50m, 7th, N.W.; 44m, 8th, N.; 45m, 10th, N.; 57m, 11th, N.N.W.; 42m, 14th, N.W.; 40m, 25th, W.; 45m, 26th, S.; 40m, 28th, W.N.W.; 51m, 29th, W. N. W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.09	29.92	30.002	49.0	1:30 P	31.0	5:30 A	40.0	40.2	38.0	4.1
2	30.06	29.90	30.003	47.0	3 P	30.0	7 A	38.5	38.9	36.5	1.7
3	30.36	30.06	30.279	48 0	3 P	28.0	6 A	38.0	37.9	32.5	8.0
4	30.44	30.36	30.428	48.0	2:30 P	22.0	6 A	35.0	35.3	31.7	6.5
5	30.42	30.08	30.275	39.0	1 P	22.0	6 A	30.5	31.7	31.0	0.0
6	30.08	29.86	29.920	63 0	5 P	32.0	0 A	47.5	45.3	40.3	9.4
7	30.16	29 81	29.997	47.0	3 P	31.0	12 P	39.0	40.9	33.5	7.5
8	30.34	30.16	30.284	49.0	3 P	26.0	6 A	37.5	35.9	30.0	10.2
9	30 35	30.07	30.191	53.0	3 P	24.0	6 A	39.5	40.2	37.0	10 7
10	30.07	29 90	29.988	46.0	3 P	31 0	6 A	38.5	37.8	34.2	10.1
11	30.02	29.85	29.920	58.0	5 P	29 0	4 A	43.5	43.8	37.0	11.0
12	30.07	29.84	29.961	67.0	3 P	35.0	4 A	51.0	50.0	39.0	4.5
13	30.18	29.86	30.034	53.0	5 P	33 0	12 P	43.0	45.4	36 2	10 4
14	30.42	30.18	30.311	54.0	4 P	26.0	6 A	40.0	40.7	34.7	10.8
15	30.46	30.20	30.342	66.0	5 P	24.0	6 A	45.0	45.8	38 0	10.7
16	30.20	29.94	30.051	72 0	1 P	28.0	6 A	50.0	54 7	44.5	6.4
17	30.27	30.03	30.216	64.0	4 P	47.0	8 A	55.5	55.7	45.0	6 5
18	30.34	30.14	30.269	72.0	3:30 P	35.0	6 A	53.5	53.0	45 5	10 1
19	30.19	30.00	30.101	82.0	3:30 P	40.0	5 A	61.0	58.5	49.5	8.7
20	30.06	29.92	29.989	85 0	1 P	45.0	6 A	65.0	64.4	55.0	8.3
21	30.15	30.00	30.084	80.0	2 P	46.0	6 A	63.0	63.2	56.0	9.5
22	30.05	29.95	30.000	56.0	0 A	38.0	12 P	47.0	47.9	45.7	0.0
23	30.16	29.98	30.064	51.5	2 P	33.0	12 P	42.3	41.6	36.7	0.8
24	30.23	30.14	30.204	47.0	4 P	28 0	6 A	37.5	37.3	32.7	4.8
25	30 23	30.09	30.182	52.0	12 M	25.0	6:30 A	38.5	37.8	33.7	6.2
26	30.18	29.76	29 961	57.0	12 M	27.0	6 A	42.0	41.1	37.3	1 8
27	29.76	29.53	29.589	57.0	2 P	39 0	6 A	48.0	46.5	42.7	c.9
28	29.65	29.53	29.623	57.0	5 P	38.0	6 A	47.5	46.5	39.5	10.5
29	29.77	29.46	29.604	56 0	4 P	37.0	6 A	46.5	45.9	39.3	8.4
30	29.86	29.77	29.841	61.0	3 P	31.0	6 A	46.0	47.8	43.0	8.9

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	34.5	.251	80.0	N. N. W.	118	1.5	17	9 A				
2	34.0	.230	83.5	E.	150	1.0	14	8 A	0 A	8 A	T	T
3	23.5	.224	57.0	E.	156	2.5	22	11 A				
4	27.0	.200	74.5	S.E.	75	1.0	14	1 P				
5	29.0	.182	87.5	S.	71	1.5	17	12 M	1 P	12 P	.35	2
6	35.5	.292	74.0	N.W.	123	3.5	26	10 P	9 P	11 P	T	
7	23.5	.234	55.5	N.W.	404	12.5	50	3 P				
8	21.5	.194	66.5	N. N. W.	346	9.5	44	12 M				
9	30.0	.258	67 0	N.	175	2.0	20	12 P				
10	31.0	.217	78.5	N.	306	10.0	45	6 P				
11	27.5	.283	53 5	N. N. W.	278	16.0	57	2 P				
12	28.5	.326	50.0	W.	150	4.5	30	2 P				
13	25.0	.276	49.5	N.W.	193	3 0	24	5 P				
14	28.0	.254	62.0	N.W.	232	9.0	42	5 P				
15	28.0	.312	51.0	W.N.W.	101	2.0	20	12 M				
16	36.0	.410	55.5	W.	130	4.0	28	12 M	9 P	12 P	T	
17	41.5	.345	75 0	N W.	118	1.0	14	1 P	0 A	8 A	T	
18	39.5	.391	60.5	S.S.W.	172	4.5	30	6 P				
19	43.5	.456	64 5	S.	143	4.5	30	4 P				
20	51.0	.546	72.0	N.W.	128	5.5	33	3 P				
21	51.5	.544	71.0	S	177	5.0	32	4 P	11 P	12 P	.05	
22	45 5	.316	98.5	N.	145	2.0	20	5 P	0 A	12 P	.92	
23	31.0	.250	68.0	W.N.W.	252	3.5	26	2 P	0 A	1 A	.05	
24	25.0	.219	63 0	W.N.W.	159	5.0	32	8 A				
25	29 5	.213	77.5	S. W.	159	8.0	40	5 P	3 P	5 P	.02	
26	36.5	.225	97.5	S.	217	10.0	45	12 M	4 P	12 P	.16	
27	41 5	.291	88.5	N.	78	0.5	10	1 A	3 P	11 P	.05	
28	32.5	.296	62.0	N.W	285	8.0	40	6 P				
29	30.5	.307	55.0	W.N.W.	266	13.0	51	7 A				
30	36.5	.338	63.5	W.S.W	67	0.5	10	3 P				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The forwardness of the season, so pronounced when the month opened, was practically all lost when the month closed. The first three weeks of the month were practically free from precipitation and the danger of forest fires very marked. A heavy rainstorm on the 22nd materially relieved the droughty conditions. Thunder storms were few and of but little intensity. The number of gales was large and several were of considerable intensity.

The records of the several weather elements show the following features of interest: The mean barometer was high for April and the range of pressure less than usual. The pressure in general was rather unsteady with minor fluctuations, at times rather rapid.

The total wind movement was about the average amount and came rather persistently from the northwest quadrant.

The mean hourly temperature was about one degree below the normal and the range of temperature abnormally large, due to a very high maximum for the month.

The minimum temperature was about the average value. The range of temperature on the 16th of 44 degrees was extremely large for this station.

The mean dewpoint was below the normal and the relative humidity nearly normal.

The total precipitation was a little more than one half the usual amount and about two-thirds of it occurred during a single storm. There was a snow storm of two inches early in the month. Thin ice on shallow water was formed near the close of the month.

The amount of bright sunshine was nearly normal.

J. E. OSTRANDER, Meteorologist

W. H. PARKIN, Observer.

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AMHERST, MASS.

BULLETIN No. 461. MAY, 1927

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.18, 21st, 11 A.
Minimum reduced to freezing,	29.24, 26th, 4 P.
Reduced maximum reading,	30.47, 21st, 11 A. 22d, 1A.
Reduced minimum reading,	29.53, 26th, 4 P.
Mean semi-daily reduced	29.917
Monthly range	0.94

Air Temperature. In Degrees Fahr.

Highest	75.0, 11th, 4 P.
Lowest	31.0, 2nd, 5:30 A.
Mean hourly	53.2
Mean of means of max. and min.	53.9
Mean sensible (wet bulb)	50.5
Monthly range	44.0
Highest mean daily	63.0, 11th
Lowest mean daily	42.0, 5th
Mean maximum	64.8
Mean minimum	43.0
Mean daily range	21.8
Greatest daily range	36.5, 29th
Least daily range	7.0, 10th

Humidity.

Mean dew point	47.8
Mean force of vapor	.407
Mean relative humidity	83.9

Precipitation. In inches.

Total precipitation, in inches	4.83
Number of days on which .01 inch or more rain fell	14

Wind.

Total movement	3535m
Greatest daily movement	279m, 27th
Least daily movement	35m, 25th
Mean daily movement	114m
Mean hourly velocity	4.7m
Maximum pressure per square foot, 7.0 lbs= 37m per hour, 7th, 2 P.	N.N.W., 26th, 6 A. S.
Maximum velocity for 5 minutes, 24m per hour, 27th, 6 P., N.	
Prevailing direction, West Southwest	

Summary.

South	19 per cent
Southwest	19 " "
North Northwest	16 " "
Northwest	13 " "
East	10 " "
Other directions	23 " "

Weather.

Mean cloudiness observed	60 per cent
Total cloudiness recorded by the Sun Thermometer	316 hours = 70 per cent
Number of clear days	0
Number of fair days	11
Number of cloudy days	20

Bright Sunshine.

Number hours recorded. 137 = 30 per cent.

Rain. 4th, 5th, 9th, 10th, 13th, 15th, 16th, 19th, 20th, 21st, 22d, 23d 24th, 25th, 26th, 27th,

Thunder and Lightning. 9th, 15th, 16th, 22d, 25th, 26th, 27th.

Frosts. 2d. 3d.

Gales. 37m, 7th, N.N.W.; 35m, 22d, S. S. W.; 37m, 26th, S.; 35m, 27th, N.; 35m, 28th N.W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine.
	Maximum	Minimum.	Mean, Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	29.92	29.79	29.889	63.5	3 P	36.0	5:30 A	49.7	49.6	46.3	7.7
2	29.81	29.72	29.808	58.0	2 P	31.0	5:30 A	44.5	45.3	43.7	0.4
3	29.96	29.80	29.864	64 0	2 P	32.0	6 A	48.0	51.3	48.5	7.4
4	30.10	29 96	30.059	58.0	10 A	43.0	12 P	50.5	51.0	47.3	9.5
5	30.08	29.98	30 044	58 5	5 P	40.0	6 A	49.3	42.0	42.7	2.7
6	30.05	29.96	30.011	68 0	3 P	42.5	6 A	55.3	55.3	50.3	9.5
7	30.18	30.00	30.076	68.0	5:30 P	42.0	5:30 A	55.0	54.9	48.0	11.4
8	30.27	30.08	30.198	73.5	5 P	33.0	6:30 A	53.3	53.2	47.5	11.0
9	30.15	29.93	30.070	52.0	7 P	39 5	5:30 A	45.7	47.2	45.5	0.0
10	30.03	29.70	29.898	55.0	12 P	48.0	3 A	51.5	51.0	51.0	0.0
11	29.77	29.63	29.700	75.0	4 P	55.0	12 P	65.0	63.0	58.0	3.5
12	29.87	29.77	29 831	67.0	2 P	51 0	5 A	59.0	56.2	51.0	1.7
13	29.92	29.82	29.868	65.0	4 P	49.5	3 A	57.3	55.3	52 5	2.2
14	29.92	29.73	29.829	68.0	1:30 P	44.0	6 A	56.0	57.5	54.5	6.0
15	29.73	29.58	29 610	65 5	4 P	47.0	12 P	56.3	52.4	49 7	2.6
16	29.70	29.61	29.670	57.0	11:30 A	42.5	5 A	49.7	49 3	49 3	1.4
17	29.83	29.72	29 765	64.5	3 P	44.0	6 A	54.3	53.8	50.8	4 3
18	29.83	29.61	29 708	68.0	5:30 P	43.0	4 A	55.5	54.9	54 5	1 6
19	29.92	29.81	29.809	65 0	6 P	40.0	5:30 A	52.5	52.4	51.7	2.8
20	30.30	29.87	30.074	66.0	3 P	43.0	12 P	54.5	54.0	50.7	2.9
21	30.47	30.30	30.406	74.0	4 P	37.0	5 A	55.5	55.9	54.3	7.5
22	30.47	30.00	30.214	70.5	4 P	50 0	5 A	60.3	58.1	53.5	5.0
23	30.03	29.96	30.013	59.5	10 A	48.0	12 P	53.7	53.2	54.5	0.0
24	30 05	29.96	30.006	53.5	5 P	46.0	5 A	49.7	49.4	49.0	0.0
25	30.01	29.63	29.764	56.0	2 P	47 0	7 A	51.5	50 9	50.5	0.0
26	29.64	29.53	29.563	71.5	2:30 P	47.0	6 A	59.3	57.3	56.5	1.4
27	29.76	29 63	29.702	59.0	2:30 P	47.5	5:30 A	53.3	50.3	44.5	1.6
28	30.00	29.72	29.802	66.0	5 P	40 0	5 A	53.0	52 0	46.0	10.7
29	30.15	30.00	30.104	74 5	5 P	38.0	5 A	56.3	57.3	53.7	10.8
30	30.17	30.06	30.140	73.0	3:30 P	43.0	5:30 A	58.0	59.3	56.3	11.1
31	30.10	29.78	29.937	73.0	4:30 P	43.0	4 A	58.0	54.3	53.5	0.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	41.5	.361	73.5	N.	125	5 5	33	4 P				
2	40.5	.316	82.0	N. W.	100	3.0	24	4 P				
3	45.0	.410	72.5	N. N. W.	161	4 5	30	3 P				
4	44.0	.365	79.5	E.	58	2.0	20	9 A	7 A	12 P	.05	
5	41.5	.286	92.5	N.N.E.	61	0.5	10	8 A	0 A	12 P	.21	
6	43.5	.414	77.0	S. W.	170	4.5	30	1 P				
7	40.5	.423	60.5	N.N.W.	174	7.0	37	2 P				
8	41.5	.408	64.0	S.W.	124	4.5	30	8 P				
9	44.0	.320	90 5	S.	81	0.0	—	—	8 A	12 P	.11	
10	50.5	.380	98.5	S.	36	1.0	14	6 P	0 A	11 P	.66	
11	55.5	.543	84 0	S.W.	143	2.0	20	2 P				
12	47.5	.431	76.5	N.W.	104	1.0	14	6 P				
13	50.5	.434	85 0	N.W.	108	2.0	20	12 M	0 A	11 A	.20	
14	50.5	.502	74.0	S.	76	2.5	22	8 P				
15	50.0	.360	98.5	E.	112	0.5	10	9 A	6 A	11 P	.35	
16	48.0	.369	92.0	S.	93	1.0	14	4 P	11 A	12 P	.73	
17	48.0	.410	84.5	W.	174	1.0	14	4 P				
18	53.0	.451	89 5	S.W.	48	4.5	30	11 A				
19	50.5	.405	93.5	S.S.W.	172	5.0	32	6 P	6 P	8 P	.02	
20	48.5	.404	86.0	N.W.	67	0.0	—	—	5 A	7 A	T	
21	51.5	.482	82 5	S.W.	93	0.5	10	9 P	10 P	12 P	T	
22	50 5	.466	80.5	S.	213	6 0	35	3 P	0 A	2 A	.01	
23	54.0	.433	97.0	N.N.E.	103	0.5	10	11 A	8 A	12 P	.61	
24	49.0	.355	98.5	E.S.E.	36	0.0	—	—	0 A	12 P	.48	
25	50 5	.366	100.0	S.E.	35	0.0	—	—	0 A	9 P	1.12	
26	56.0	.350	97.0	S.	97	7.0	37	6 A	4 P	12 P	.11	
27	40.5	.331	80.0	N N.W.	279	6.0	35	8 A	0 A	12 M	.17	
28	41.0	.376	71.0	N.N.W.	247	6.0	35	3 P				
29	49.0	.507	69 5	S.W	58	1.0	14	9 P				
30	54.5	.500	85.0	E.	94	1.5	17	3 P				
31	51.5	.444	86.5	N N.W.	93	2.0	20	9 P				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was very disappointing and the season's progress slow. Much cloudiness and generally low temperature were the most noticeable characteristics. The maximum temperature came early in the month and was about twelve degrees lower than normal. It was also considerably lower than the maximum for the preceding month. The last third of the month was very cloudy and the amount of precipitation large, giving a rainfall for the month of more than an inch greater than the normal. Much of the garden planting has had to be done over and aside from the grass, vegetation has made little progress.

The mean barometer was considerably lower than normal and the range of pressure about the usual amount. The wind movement was more than a thousand miles less than usual, although several moderate gales were registered. The wind was more changeable than usual.

The mean hourly temperature was more than four degrees below normal. The last frost at the station was early in the month. On the 21st light frost was reported on low land in the vicinity but no damage was noted.

The mean dew point was about normal but the relative humidity was abnormally high. The large amount of rain has saturated the ground and the danger from forest fires greatly reduced.

About two-thirds of the days were cloudy and not a single day recorded as clear. A clear day according to our scale being one with eighty per-cent or more of the possible sunshine for that date.

J. E. OSTRANDER, Meteorologist

W. H. PARKIN, Observer.

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BULLETIN No. 462. JUNE, 1927

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing	30.01, 18th, 8 A
Minimum reduced to freezing	29.33, 10th, 7 P.
Reduced maximum reading	30.30 18th, 8 A.
Reduced minimum reading	29.61, 10th, 7 P.
Mean semi-daily reduced	29.982
Monthly range	0.69

Air Temperature. In Degrees Fahr.

Highest	89.0, 23d, 1 P.
Lowest	37.5, 2nd, 5:30 A.
Mean hourly	62.4
Mean of means of max. and min.	61.9
Mean sensible (wet bulb)	58.6
Monthly range	51.5
Highest mean daily	73.6, 23d
Lowest mean daily	55.2, 15th
Mean maximum	74.4
Mean minimum	49.4
Mean daily range	25.0
Greatest daily range	35.5, 16th
Least daily range	8.0, 19th

Humidity.

Mean dew point	56.0
Mean force of vapor	.573
Mean relative humidity	80.2

Precipitation. In inches.

Total precipitation, in inches	3.37
Number of days on which .01 inch or more rain fell	12

Wind.

Total movement	3475m
Greatest daily movement	242m, 6th
Least daily movement	45m, 3d
Mean daily movement	116m
Mean hourly velocity	4.8m

Maximum pressure per square foot, 13.0 lbs = 51m per hour, 5th, 3 P. S.S.W.

Maximum velocity for 5 minutes, 30m per hour, 15th, 2 P., S.

Prevailing direction, West Northwest

Summary.

South	20 per cent
North	17 " "
Northwest	13 " "
Northeast	10 " "
West	10 " "
South Southwest	10 " "
Other directions	20 " "

Weather.

Mean cloudiness observed	48 per cent
Total cloudiness recorded by the Sun Thermometer	256 hours = 56 per cent
Number of clear days	1
Number of fair days	16
Number of cloudy days	13

Bright Sunshine.

Number hours recorded. 201 = 44 per cent.

Rain, 4th, 5th, 10th, 12th, 14th, 15th, 19th, 22d, 23d, 25th, 26th, 27th, 28th, 29th, 30th.

Thunder and Lightning, 10th, 15th, 23d, 25th, 27th.

Hail, 15th.

Gales, 35m, 1st, N.; 35m, 4th, S.; 51m, 5th, S.S.W.; 38m, 10th, N.E.; 39m, 15th, S.; 36m, 25th, S.; 36m, 27th, S.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine.
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.02	29.75	29.847	69.0	5:30 P	43.0	5 A	56.0	57.3	54.0	7.4
2	30.04	29.95	30.016	69.5	5 P	37.5	5:30 A	53.5	55.9	53.5	9.4
3	30.20	30.04	30.133	74.0	5:30 P	39.5	5 A	56.7	57.6	55.0	9.7
4	30.20	29.77	29.990	69.0	0:30 P	39.0	6 A	54.0	56.3	54.7	6.5
5	29.98	29.74	29.796	78.0	2:30 P	50.0	12 P	64.0	60.8	55.2	8.2
6	30.15	29.98	30.122	69.5	3 P	45.0	5 A	57.3	57.1	51.0	11.0
7	30.12	29.96	30 040	75.5	2:30 P	45.0	5:30 A	60.3	61.0	58.0	9.7
8	30.02	29.96	30.000	78.0	4 P	47.0	6 A	62.3	65.2	62.0	10.7
9	29.98	29.88	29.925	80.5	2 P	55.5	5 A	68.0	69.5	66.5	7.1
10	29.88	29.61	29 676	87.0	4 P	63.5	5 A	75.3	73.0	72.5	9.0
11	29.72	29.61	29.654	79.5	2:30 P	60.0	12 P	69.7	68.7	64.3	11.0
12	29 93	29.69	29.848	69.5	0:30 P	49.0	12 P	59.3	59.3	55.7	2.3
13	30 02	29.92	29.942	75.5	2:30 P	44.0	5 A	59.7	61 3	57.0	11.8
14	30.02	29.86	29.949	62.0	4 P	52.0	12 P	57.0	57.8	55.5	0.0
15	30.05	29.83	29.850	67.0	6 P	45.0	5:30 A	56 0	55.2	55.5	2.2
16	30.18	30.05	30.100	74.5	2 P	39.0	5 A	56.7	58.0	54.5	9.7
17	30.29	30.18	30.209	75.0	1:30 P	49.0	4:30 A	62.0	63.8	61.0	5 7
18	30.30	30.18	30.252	76.5	2 P	46.0	5 A	61.3	64.0	53.5	9 5
19	30.18	30.01	30.089	61.0	6 P	53.0	6 A	57.0	58 0	56.3	0.0
20	30 01	29.94	29.965	72.5	5 P	56.0	5 A	64.3	63 8	57.7	5.6
21	29.97	29.89	29.938	83.0	3:30 P	50 0	5:30 A	66.5	67.5	61.3	12.5
22	29.97	29'85	29 904	79.5	1 P	52.5	6 A	66.0	69.8	68.0	4.0
23	29.86	29.75	29.817	89.0	1 P	65.0	12 P	77.0	73.6	68.5	5.5
24	30.11	29.83	30.072	76 0	5 P	50.0	12 P	63.0	63.9	56.0	11.3
25	30.10	29.89	29.999	76.0	2:30 P	47.0	2 A	61.5	61.0	58.7	3.5
26	30.00	29.77	29.827	70.5	1 P	53.0	12 P	61.7	63.1	60.7	0.7
27	30.20	30.00	30.113	78.0	10 A	47.0	5:30 A	62.5	63.6	57.7	10.1
28	30.25	30.18	30.213	72.0	1 P	49.0	5:30 A	60.5	61 0	57.3	2.4
29	30.18	30.06	30.090	70.0	3 P	55.0	6 A	62.5	61.0	58.3	0.5
30	30.13	30.05	30.092	74.0	4:30 A	54.5	6 A	64.3	62.9	58.5	4.3

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	51.0	.475	80.0	N.	212	6.0	35	12 M				
2	50.5	.472	78.5	N.W.	89	3.5	26	3 P				
3	52.5	.497	80.0	N.W.	45	0.0	—	—				
4	53.5	.458	91.0	S.S.W.	114	6.0	35	4 P	5 P	12 P	.42	
5	52.5	.520	73.0	W.	180	13.0	51	3 P	3 P	6 P	.22	
6	45.0	.482	63.5	W.N.W.	242	5.5	33	1 P				
7	54.5	.573	74.0	S.S.W.	143	3.5	26	6 P				
8	59.0	.668	75.5	W.	92	1.0	14	8 A				
9	64.5	.742	81.5	S.W.	143	1.0	14	12 M				
10	71.5	.858	89.5	S.	190	7.0	38	8 P	8 P	11 P	1.02	
11	62.0	.691	82.0	N.W.	68	4.0	28	4 P				
12	54.5	.484	87.5	N.N.W.	120	2.5	22	10 A	4 P	5 P	T	
13	53.0	.565	71.5	N.	99	1.5	17	8 P				
14	54.0	.478	87.0	N.W.	57	0.5	10	7 P	8 A	3 P	.02	
15	53.5	.489	83.0	S.S.W.	80	7.5	39	2 P	11 A	12 M	.08	
16	51.5	.494	76.5	N.	66	1.5	17	1 P				
17	58.0	.638	75.5	W.	50	0.0	—	—				
18	47.0	.546	61.5	S	96	2.0	20	1 P				
19	55.0	.475	91.5	N.E.	79	1.0	14	6 P	0 A	5 P	.37	
20	55.0	.574	77.5	N.E.	184	3.0	24	12 M				
21	57.5	.664	71.0	N.	109	1.0	14	11 A				
22	67.0	.755	86.0	S.	137	4.5	30	1 P	3 P	4 P	T	
23	68.0	.722	94.0	S.	89	1.5	17	6 P	6 P	8:30 P	.12	
24	50.5	.569	65.5	N.N.E.	135	2.0	20	12 M				
25	56.5	.556	83.0	S.	183	6.5	36	4 P	8 P	12 P	.55	
26	59.0	.581	86.5	E.	147	2.0	20	2 P	0 A	12 M	.20	
27	53.0	.592	78.5	N.	122	6.5	36	6 P	5:30 P	6 P	.01	
28	54.5	.527	82.0	N.E.	49	0.0	—	—	3 P	12 P	.01	
29	57.5	.515	92.0	S.S.E.	76	0.5	10	11 A	0 A	12 P	.24	
30	57.0	.530	87.5	S.	49	0.0	—	—	0 A	4 A	.05	

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

While the records of the several weather elements show no very abnormal features, the weather as a whole was far from normal. The humidity, temperature and cloudiness conspired to make the month more or less unpleasant. The temperature rose above eighty degrees on only four days and the mean hourly temperature was below sixty degrees on one third of the days. The last third of the month was very cloudy and rainy although the total rainfall was not large.

The barometer records were generally about normal and fluctuations of pressure were generally small and unimportant. As a result of the sluggish barometer the wind movement was a little less than normal. Several gales were recorded, due to shifting of wind direction in several cases. The wind direction was quite variable.

The mean temperature was nearly four degrees lower than usual and the maximum failed to reach ninety degrees. The minimum temperature was about two degrees below the normal for this feature and light frost was reported on low lands in this vicinity on the 2d and 16th.

Considerable hail fell for a short time on the 15th about noon but as there was but little wind at the time no damage resulted.

The total precipitation was slightly more than normal and much of it fell during rather light showers the last part of the month.

The mean relative humidity was very high for the time of year. The mean dew point was practically normal.

The amount of sunshine was much less than usual and nearly one half the days were cloudy.

J. E. OSTRANDER, Meteorologist

E. H. WHEELER, Acting Observer.

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AUG · · 1927
Agricultural

BULLETIN No. 463. JULY, 1927

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing, 30.01, 21st, 11 A.
Minimum reduced to freezing, 29.45, 24th, 5 P. 29th, 3 P.
Reduced maximum reading. 30.30, 21st, 11 A.
Reduced minimum reading, 29.73, 24th, 5 P. 29th, 3 P.
Mean semi-daily reduced 29.969
Monthly range 0.57

Air Temperature. In Degrees Fahr.

Highest . . . . . 91.0, 13th, 2-30 P.
Lowest . . . . . 43.5, 5th, 6 A.
Mean hourly 69.6
Mean of means of max. and min. 70.6
Mean sensible (wet bulb) 67.2
Monthly range 47.5
Highest mean daily 78.3, 14th
Lowest mean daily 60.0, 5th
Mean maximum 80.4
Mean minimum 60.8
Mean daily range 19.6
Greatest daily range 33.0, 9th
Least daily range 6.0, 23d

Humidity.

Mean dew point 65.9
Mean force of vapor 726
Mean relative humidity 88.8

Precipitation. In inches.

Total precipitation, in inches 3.40
Number of days on which .01 inch or more rain fell 14

Wind.

Total movement 3426m
Greatest daily movement 277m, 4th
Least daily movement 36m, 26th
Mean daily movement 112m
Mean hourly velocity 4.7m
Maximum pressure per square foot, 10.0 lbs = 44m per hour, 13th, 4 P. S.S.W.
Maximum velocity for 5 minutes, 27m per hour, 13th, 4 P., S.S.W.
Prevailing direction, South Southwest

Summary.

South . . . . . 39 per cent
Southwest . . . . . 16 " "
South Southwest . . . . . 13 " "
Other directions . . . . . 32 " "

Weather.

Mean cloudiness observed . . . . 60 per cent
Total cloudiness recorded by the Sun Thermometer . . 256 hours = 55 per cent
Number of clear days 3
Number of fair days 22
Number of cloudy days 6

Bright Sunshine.

Number hours recorded, 206 = 45 per cent.
Rain, 3d 6th, 7th, 10th, 12th, 13th. 14th, 15th, 16th, 17th, 18th, 20th. 23d, 27th, 29th, 31st.
Thunder and Lightning, 7th, 12th, 13th, 14th, 15th, 16th, 20th, 27th, 29th.
Gales, 44m, 13th, S.S.W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine.
	Maximum	Minimum.	Mean, Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.10	29.91	29.981	74.0	12 M	51.5	4 A	62.7	65.7	61.3	7.5
2	29.91	29.84	29.887	78.5	4:30 P	62.5	5:30 A	70.5	70.8	68.0	6.5
3	29 84	29 74	29.771	86.0	4 P	64.0	3 A	75.0	71.8	69.5	8.0
4	30.07	29'85	29 987	70.0	3:30 P	50.0	12 P	60.0	60.9	56.3	6.4
5	30.11	30.04	30.071	74.0	5 P	43.5	6 A	58.7	60.0	56.3	8.0
6	30.09	29.99	30 039	75.5	2:30 P	44.5	5:30 A	60.0	62.9	60.3	7.0
7	29.99	29.74	29.801	80.0	3 P	60.0	3 A	70.0	67.7	65.0	2.0
8	30.12	29.74	29.965	77.0	4:30 P	58.0	12 P	67.5	67.3	62.7	8 0
9	30.22	30.14	30.213	82.0	5 P	49.0	5:30 A	65.5	66.8	62.3	11.1
10	30.23	30.10	30 160	69.0	5 P	61.0	6 A	65.0	65.0	64.0	0.0
11	30.11	30.02	30.060	81.0	5:30 P	64.0	6 A	72.5	71.3	68.3	10.5
12	30.07	29.93	29 991	87.0	3:30 P	64.0	4 A	75.5	72.6	70.3	6.8
13	29.99	29.87	29.931	91.0	2:30 P	64.5	4:30 A	77.7	75.1	71.5	6.1
14	29.89	29.79	29.844	90 0	2:30 P	70.0	5 A	80.0	78.3	76.7	6 7
15	30 00	29.89	29.955	85.0	1 P	71.0	6 A	78.0	75.5	73.5	4 5
16	30.09	29.98	30.056	86.0	1:30 P	72.0	5 A	79.0	75.5	74.0	6.8
17	30.07	29.94	29.996	81.0	4:30 P	70.0	5 A	75.5	74.4	72.5	3 9
18	29.98	29.91	29 962	86 0	2:30 P	67 0	12 P	76.5	74.3	71.3	7 6
19	30.04	29.99	30.014	79.0	5 P	62.0	6 A	70.5	68.9	65.3	6 7
20	30.20	30.04	30.135	81.0	2:30 P	61.0	6 A	71.0	69.5	68.7	6.2
21	30.30	30.20	30.277	84.0	4:30 P	57.5	6 A	70.7	69.4	67.0	6.4
22	30.28	30.01	30.136	78.0	3 P	63.0	5 A	70.5	69.3	67.0	8.5
23	30.01	29.78	29 871	70.0	1 P	64.0	4 A	67.0	66.8	67.7	0.0
24	29 80	29.73	29.744	78.0	4:30 P	64.0	0 A	71.0	71.0	67.5	10.0
25	29.97	29.78	29.793	79.5	5:30 P	62.5	5:30 A	71.0	70 1	69.0	9.4
26	30.04	29.96	30.001	84 5	3:30 P	55.5	6 A	70.0	70 5	66.0	9.9
27	29.99	29 92	29.916	82.5	3:30 P	60 5	6:30 A	71.5	69.8	65.0	6.3
28	29.97	29.89	29.927	82.5	3:30 P	59.0	6 A	70 7	71.2	68.5	9 0
29	29 90	29.73	29.788	86.0	2:30 P	66.0	6:30 A	76.0	73.2	70.0	6.2
30	29.95	29.83	29.937	83.5	2 P	59.0	6:30 A	71.3	71.1	67.7	10.5
31	29.94	29.75	29.835	73.0	6 P	65.5	7 A	69.3	69.8	69.0	0.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	57.5	.621	77.5	N.E.	124	2.0	20	1 P				
2	65.5	.792	80.5	E.	163	2.0	20	12 M				
3	68.5	.778	90.0	N.	104	3.0	24	6 P	5 P	6 P	.02	
4	54.0	.494	86.0	N.W.	277	5.5	33	8 P				
5	52.5	.540	73.0	W.	133	4.5	30	9 A				
6	57.5	.606	79.0	S.	94	2.5	22	5 P	4 P	8 P	T	
7	64.5	.635	95.0	S.	210	3.0	24	1 A	3 P	12 P	.37	
8	60.0	.638	83.0	W.S.W.	157	1.5	17	4 P				
9	59.5	.647	80 0	S.	38	0.5	10	8 P				
10	63.0	615	93 5	N.N.E.	65	0.0	—	—	4 A	12 M	.05	
11	67.5	.757	90.5	S.	63	1.0	14	6 P				
12	70.0	.771	95 0	S	114	4.5	30	3 P	5 P	6:30 P	.04	
13	72.0	.816	92.0	S.S.W.	94	10.0	44	4 P	3:30 P	4 P	.06	
14	76.0	.969	93.5	S.	163	5.0	32	12 M	8 P	12 P	.15	
15	73.0	.863	94.5	S.	106	1.5	17	8 P	0 A	3 P	.15	
16	73.5	.874	94.5	S.	136	2.0	20	11 A	12 M	8 P	.46	
17	71.5	.852	91.0	S.S.W.	169	4.0	28	6 P	4 P	5 P	.03	
18	70.5	.816	90.5	S.W.	119	2.5	22	0 A	0:30 A	2 A	.05	
19	63.5	.677	87.5	W.	40	0.0	—	—				
20	68 5	.743	92.0	N N.W.	68	0.0	—	—	5 P	6 P	.04	
21	66.0	.696	93 0	S. W.	45	0.0	—	—				
22	65.5	.728	87.0	S.	106	0.0	—	—				
23	68.0	.696	96.5	S.	102	3.0	24	2 P	9 A	11:30 P	.53	
24	66 0	.749	84.5	S S.W.	152	2.0	20	11 A				
25	67.0	.784	86.5	S.W.	137	1.0	14	11 A				
26	65 0	.686	90.5	S.	36	0.0	—	—				
27	64.0	.655	91.0	S.	80	1.0	14	7 P	0:30 P	4:30 P	T	
28	67.5	.750	92.0	S.W.	71	1.5	17	2 P				
29	69.5	.866	90.5	S.S.W.	100	0.5	10	9 A	3:30 P	8 P	.05	
30	66.0	.762	83.5	S.W.	60	0.0	—	—				
31	69.5	.717	98 5	S.S.E.	100	0.5	10	4 P	3:30 A	5 P	1.40	

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was far from normal in some respects and nearly normal in other features. The first third of the month was rather cool and the most pleasant. The middle third was marked by light precipitation nearly every day and very high humidity. The last third had fewer showers but more than one-half the precipitation occurred during this period. This was due to the heavy rain on the last day of the month.

An examination of the wind direction shows that for more than one-half the time the wind was practically south and the relative humidity extremely high. A large amount of cloudiness was also recorded. The weather as a whole was much more sultry than usually occurs in August.

The barometer record presented no unusual features. The temperature was a little lower than normal. The maximum temperature reached ninety degrees on only two days. The minimum temperature was about two degrees lower than usual.

The mean dew point and relative humidity were the outstanding abnormal features. The mean dew point was about four degrees higher than usual and the mean relative humidity about 15 per cent above the normal and much higher than any previous record at this station.

The total precipitation was about an inch less than usual. Heavy showers in surrounding towns resulted in only a light rainfall here, in several instances.

The total wind movement was rather small and only one gale was registered.

The amount of cloudiness was large and about two-thirds of the days were recorded as fair.

J. E. OSTRANDER, Meteorologist

E. H. WHEELER, Acting Observer.

BULLETIN No. 464. AUGUST, 1927

Meteorological Observations

LIBRARY OF THE
Massachusetts Agricultural College,
AMHERST, MASS.

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.07, 26th, 8 P.
Minimum reduced to freezing,	29.41, 24th, 12 M.
Reduced maximum reading,	30.36, 26th, 8 P.
Reduced minimum reading,	29.70, 24th, 12 M.
Mean semi-daily reduced	29 997
Monthly range	0.66

Air Temperature. In Degrees Fahr.

Highest	82.5, 1st, 1 P.
Lowest	44.0, 25th, 5-30 A.
Mean hourly	64 6
Mean of means of max. and min.	64.9
Mean sensible (wet bulb)	61.3
Monthly range	38.5
Highest mean daily	74.1, 8th
Lowest mean daily	54.8, 18th
Mean maximum	75.3
Mean minimum	54.6
Mean daily range	20.7
Greatest daily range	33.0, 4th, 25th
Least daily range	8.0, 18th, 23d

Humidity.

Mean dew point	60.7
Mean force of vapor	.587
Mean relative humidity	87.3

Precipitation. In inches.

Total precipitation, in inches	5.01
Number of days on which .01 inch or more rain fell	14

Wind.

Total movement	2818m
Greatest daily movement	175m, 27th
Least daily movement	32m, 4th
Mean daily movement	91m
Mean hourly velocity	3.8m

Maximum pressure per square foot, 5.0 lbs = 32m per hour, 24th, 1 P. N.

Maximum velocity for 5 minutes, 21m per hour, 16th, 9 A., N.

Prevailing direction, Southwest

Summary.

South	40 per cent
Northwest	13 " "
North Northeast	13 " "
Southwest	10 " "
South Southwest	10 " "
Other directions	14 " "

Weather.

Mean cloudiness observed	55 per cent
Total cloudiness recorded by the Sun Thermometer . . 232 hours = 54 per cent	
Number of clear days	4
Number of fair days	16
Number of cloudy days	11

Bright Sunshine.

Number hours recorded, 197 = 46 per cent.

Rain, 1st, 5th, 8th, 9th, 12th, 13th, 14th, 18th, 21st, 23d, 24th, 26th, 27th, 28th, 29th.

Thunder and Lightning, 1st, 5th, 8th, 12th, 13th, 31st.

Gales, None.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine.
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	29.88	29.79	29.826	82.5	1 P	67.0	12 P	74.7	72.9	68.7	6.3
2	29.98	29.76	29 911	78.0	12 M	57.0	12 P	67.5	69.3	64.0	8.3
3	30.03	29.97	30.001	75.0	4 P	46.0	6:30 A	60.5	62.2	59.5	11.2
4	30.00	29.88	29.938	81.0	4 P	48.0	6 A	64.5	65.5	59.3	12.0
5	30.00	29.85	29.920	81.0	0:30 P	54.0	6 A	67.5	65.4	62.0	7.3
6	30.06	29.99	30 026	81.0	4:30 P	51.0	5:30 A	66.0	65.5	61.5	7.8
7	30.01	29.93	29 962	82.0	3:30 P	52.0	6 A	67.0	67.8	62.0	10.0
8	29.95	29.80	29.894	78.5	11 A	67.0	4:30 A	72.7	74.1	67.0	2.3
9	30.03	29.74	29.884	77.0	3 P	56.0	12 P	66.5	68.9	65.0	5.2
10	30.09	30.03	29.065	75.0	6 P	47.5	6:30 A	61.3	63.0	58.3	11.4
11	30.08	29.96	30.014	79.0	6 P	49.0	6 A	64.0	63.9	57.7	9.8
12	29.98	29.90	29 945	80 5	3 P	55.5	5:30 A	68.0	66.1	60.5	6.2
13	30.03	29.94	29.972	81.0	2:30 P	57.0	6 A	69.0	67.4	63.7	8.3
14	30 04	29.85	29.959	75.5	0:30 P	60.5	6 A	68.0	67.0	63 7	4.4
15	29.90	29.79	29.835	73.0	3 P	54.0	10:30 P	63.5	64.4	58.5	11.6
16	29.90	29.84	29 872	70.0	3 P	48.5	5 A	59.3	60.2	62.0	8.8
17	29.93	29.81	29 853	73.0	4:30 P	49.0	5 A	61.0	60.5	56.3	8.1
18	29.97	29.88	29.926	57.5	3 P	49.5	5:30 A	53.5	54.8	54.0	0.0
19	30.02	29.86	29 932	74.5	3 P	55.5	0 A	65.0	62.2	59.3	7.2
20	30.12	30.02	30.060	77.0	3 P	54 0	2 A	65.5	63.0	60.0	7.4
21	30.19	30.12	30.153	65.0	2 P	53 0	3 A	59.0	60.6	60.0	0.0
22	30.24	30.16	30 210	82.0	3 P	61.0	0 A	71.5	69.2	65.7	9 0
23	30.16	29.90	30.053	72.0	3 P	64.0	5 A	68.0	66.9	66.0	0 0
24	30.05	29.70	29.848	70.5	2.30 P	54.0	12 P	62.3	64.2	60 7	0.8
25	30.26	30.05	30.191	77.0	4 P	44.0	5:30 A	60.5	60.3	55.5	11.0
26	30.36	30.26	30.348	68.0	2 P	52.0	3 A	60.0	59.9	66.5	4.1
27	30.32	30.19	30.230	61.0	3:30 P	52 5	7 A	56.7	56 5	53.7	0.0
28	30.19	29.94	30.075	70.0	3:30 P	56.5	4 A	63.3	62.4	61.3	0.0
29	29 95	29.87	29.931	78.0	4 P	60.0	12 P	69.0	65.5	62.7	2.4
30	30.02	29.94	30.003	76.5	3:30 P	57 0	4 A	66.7	65.1	61.0	7.5
31	30.08	30.02	30 068	80.5	2:30 P	59.5	5:30 A	70.0	68.4	63.7	8.6

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	68.5	.746	95.5	N.W.	47	0.0	—	—	3:30 P	7 P	.34	
2	61.5	.678	80.0	W.N.W.	127	2.5	22	2 P				
3	57.0	.565	84.0	N.W.	65	0.0	—	—				
4	57.0	.559	85.5	S.	32	0.0	—	—				
5	61.0	.581	93.5	S.	95	1.5	17	6 P	1:30 P	5:30 P	.03	
6	59.5	.605	85.0	S.W.	55	0.0	—	—				
7	60.0	.630	84.0	S.S.W.	101	3 0	24	4 P				
8	66.0	.698	92.5	S.	93	1.5	17	12 M	11 A	12 P	1.03	
9	62.5	.714	80.5	W.N.W.	118	3.0	24	2 P	0 A	3 P	.11	
10	54.5	.578	75 0	N.W.	43	0.0	—	—				
11	56 0	.541	84.5	S.	43	0.0	—	—				
12	58.0	.590	85 0	S.	115	4.5	30	3 P	3 P	3:30 P	.06	
13	62.5	.634	89.5	S.	96	2.5	22	12 M	1 P	1:30 P	.03	
14	63.0	.610	96.0	S.	128	2.5	22	11 A	5 P	11 P	.15	
15	55.5	.576	76.0	N.	153	2.5	22	11 A				
16	52.0	.555	73.5	S.W.	148	4.0	28	8 A				
17	54.0	.512	83.0	S. W.	99	1.0	14	12 M				
18	53.5	.425	97.0	N. W.	33	0.0	—	—	7:30 A	8 P	.80	
19	58.0	.531	91.5	N.N.E.	74	0.0	—	—				
20	60.0	.536	97.0	S.	57	0 0	—	—				
21	58.0	.558	87 0	N.E.	45	0.0	—	—	2 P	8 P	.02	
22	64.5	.676	91.5	S.	67	0.5	10	4 P				
23	66.0	.649	97.5	S.	80	0.0	—	—	7 A	7 P	.82	
24	59.0	.586	86.5	N.N.E.	177	5.0	32	1 P	6 P		T	
25	54.0	.484	86.0	S.	51	0.0	—	—				
26	54.5	.508	83.5	N.E	75	0.0	—	—	9 P	12 P	.01	
27	52.5	.437	91.0	N.N.E.	175	1.0	14	10 A	0 A	7 P	.44	
28	60.5	.566	93.0	N.N.E.	96	0.0	—	—	1:30 A	9 P	.62	
29	61.0	.608	90.0	S.S.W.	84	0.5	10	3 P	1 A	7 P	.55	
30	59.0	.604	83.5	S.S.W.	117	2.5	22	1 P				
31	62.0	.644	88.0	S.	129	2.0	20	4 P				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during the month was very much like that of the preceding month. A very large percentage of wind from the South, a very high relative humidity and the absence of high temperature were the most noticeable characteristics. The precipitation however was much larger, although the number of thunder storms was much smaller. There were several moderate rainstorms without thunder and lightning. There were but few clear days and a comparatively large number of cloudy days.

The mean barometer was practically normal and the range of pressure a little less than usual.

The mean hourly temperature was more than three degrees below the normal, and five degrees lower than that of July. The maximum temperature for the month was about eight degrees less than the average and the daily maximum rose above eighty degrees on less than one-third the days. The minimum temperature was slightly higher than usual, giving a very small range for the month. The minimum temperature fell below fifty degrees on eight days. On the 18th the highest temperature was considerably below sixty degrees.

The mean dew point was practically normal and the relative humidity more than ten per cent above the average, although slightly lower than for July.

The total precipitation was nearly an inch more than normal and fifty per cent more than during July.

The total wind movement was about five hundred miles less than usual and there were no gales recorded.

The amount of sunshine was about thirty hours less than normal.

J. E. OSTRANDER, Meteorologist

E. H. WHEELER, Acting Observer.

BULLETIN No. 465. SEPTEMBER, 1927

Meteorological Observations

AT THE

MASSACHUSETTS

AGRICULTURAL EXPERIMENT

STATION.

LIBRARY OF THE
MASS. AGRICULTURAL COLL.
AMHERST, MASS.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.14, 27th, 12 P.
Minimum reduced to freezing,	29.20, 11th, 1 P.
Reduced maximum reading,	30.44, 27th, 12 P.
Reduced minimum reading,	29.49, 11th, 1 P.
Mean semi-daily reduced	30.015
Monthly range	0.95

Air Temperature. In Degrees Fahr.

Highest	84.5, 3d, 4 P.
Lowest	34.5, 25th, 6-30 A.
Mean hourly	60.6
Mean of means of max. and min.	61.5
Mean sensible (wet bulb)	57.0
Monthly range	50.0
Highest mean daily	71.6, 3d
Lowest mean daily	52.6, 23d
Mean maximum	74.5
Mean minimum	48.4
Mean daily range	26.1
Greatest daily range	43.0, 25th
Least daily range	5.0, 1st

Humidity.

Mean dew point	55.2
Mean force of vapor	.505
Mean relative humidity	89.0

Precipitation. In inches.

Total precipitation, in inches	2.79
Number of days on which .01 inch or more rain fell	4

Wind.

Total movement	2515m
Greatest daily movement	186m, 30th
Least daily movement	33m, 17th
Mean daily movement	84m
Mean hourly velocity	3.5m

Maximum pressure per square foot, 6.0 lbs= 35m per hour, 11th, 12 M. S.S.W.

Maximum velocity for 5 minutes, 24m per hour, 11th, 2 P., N.W.

Prevailing direction, South Southeast

Summary.

South	30 per cent
South Southwest	17 " "
South Southeast	13 " "
East	10 " "
Other directions	30 " "

Weather.

Mean cloudiness observed	48 per cent
Total cloudiness recorded by the Sun Thermometer	140 hours = 38 per cent
Number of clear days	10
Number of fair days	14
Number of cloudy days	6

Bright Sunshine.

Number hours recorded. 233 = 62 per cent.

Rain. 1st, 2d, 11th, 13th, 15th, 19th.

Thunder and Lightning, 11th, 19th, 30th.

Frosts, None.

Gales, 35m, 11th, S.S.W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine.
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.09	29·88	29.994	68.0	10:30 A	63.0	6 A	65.5	64.7	63.3	0.0
2	30.09	29.88	30.034	73.0	1:30 P	63.5	6 A	68.3	67.4	65.3	4.8
3	30.09	30.01	30.060	84.5	4 P	60.0	6:30 A	72.3	71.6	67.3	11.0
4	30.21	30.00	30.096	79 0	2 P	57.0	12 P	68.0	68.8	63.0	11.4
5	30.27	30.18	30.235	78.5	4 P	46.5	6:30 A	62.5	61.2	54.0	10.5
6	30.20	30.01	30.120	81.5	3:30 P	44.0	6 A	62.7	62.1	58.7	12.0
7	30.01	29.90	29.950	81.0	3:30 P	53.5	6 A	67.3	66.2	62.7	10.0
8	30.15	29.96	30.104	77.0	2 P	49.0	12 P	63.0	63.0	54.7	11.6
9	30.10	30.08	30.093	79.0	4 P	39.0	6:30 A	59.0	58.3	53.5	11.6
10	30.08	29.75	29.923	81.0	2 P	43.5	5:30 A	62.3	62.3	55.7	8.9
11	29.75	29.49	29.581	76.5	1:30 P	55.0	12 P	65.7	65.3	61.7	5.8
12	29.85	29.68	29.792	76.5	3 P	48.0	6 A	62.3	58.9	53.3	11.9
13	29.85	29.72	29.768	69.0	1 P	45.5	5 A	57.3	58 3	58.0	3.7
14	29.84	29.74	29.827	71.0	4 P	52.0	4:30 A	61.5	59 9	59.7	7.7
15	29.89	29.61	29 799	71.0	4 P	50.0	12 P	60.5	60.1	57.7	5 9
16	29.98	29.89	29 958	76.5	4 P	41.0	5:30 A	58.7	57.3	53.5	11.6
17	29.98	29.94	29.912	74.5	4 P	46.0	5:30 A	60.5	57.8	56.3	5.8
18	29.93	29.79	29.856	69.0	2 P	51.0	2 A	60.0	60.7	59.3	3.5
19	29.83	29.75	29.770	68.5	9 A	54 0	12 P	61.3	61.0	61.5	0.0
20	29.91	29.81	29.883	75 0	3 P	49.0	7 A	62.0	58.3	55.5	9 6
21	30.03	29.87	29.954	72 0	3 P	44.5	6:30 A	58.3	55.8	50.5	8.5
22	30.12	30.00	30.064	71.5	4 P	39.0	6 A	55.3	55.0	50.3	8 8
23	30.12	29.98	30.075	67.5	1:30 P	39.5	6:30 A	53.5	52.6	51.3	7 6
24	30.29	30.12	30.231	71.0	3:30 P	37 0	6.30 A	54.0	52.7	47.7	11.1
25	30.33	30.22	30.292	77.5	3 P	34.5	6:30 A	56.0	55.0	47.0	9.5
26	30.30	30.20	30.257	80.5	3 P	42.5	7 A	61.5	60.1	51.5	10.0
27	30.44	30.23	30.380	61.5	3 P	44.0	5 A	52.7	57.7	52.0	0.0
28	30.44	30.24	30.362	67.0	3 P	47.5	6 A	57.3	55.6	50.0	7.9
29	30.24	30.02	30.090	77.0	4 P	50.0	1 A	63.5	62 1	59.7	5.5
30	30.06	29.93	29.987	80.5	2 P	62 5	1 A	71.5	69.8	66 3	7.1

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	62.5	.605	93.5	E.N.E.	109	4.0	28	3 A	7 A	8 P	.18	
2	64.0	.615	90.0	S.S.W.	172	2.5	22	4 A	1 A	11 P	.05	
3	66.5	.713	91.5	S.	63	0.0	—	—				
4	61.0	.658	84.0	E.	150	3.5	26	1 P				
5	51.0	.487	77.5	N.E.	62	0.0	—	—				
6	58.0	.553	88.0	S.S.W.	50	0.0	—	—				
7	62.0	.592	94.5	S.	42	0.0	—	—				
8	51.0	.536	71.0	N.N.E.	119	2.0	20	11 A				
9	52.5	.436	92.5	S.S.W.	47	0.0	—	—				
10	55.0	.492	95.0	S.S.W.	91	2.0	20	6 P				
11	60.0	.601	88.0	W.	172	6.0	35	12 M	9 A	3 P	.99	
12	51.0	.462	81.5	N.	142	1.5	17	10 A				
13	57.5	.500	97.0	S.S.E.	36	0.0	—	—	10 A	4:30 P	T	
14	58.5	.547	89.5	N. W.	56	0.0	—	—				
15	56.5	.516	90.0	E.	110	0.0	—	—	8:30 A	9 A	T	
16	51.5	.434	90.5	N.E.	44	0.0	—	—				
17	56.0	.462	98.5	S	33	0.0	—	—				
18	58.0	.544	92.5	S.	91	3.0	24	11 P				
19	61.5	.556	100.0	S.S.E.	58	1.5	17	3 A	1 A	12 P	1.57	
20	55.0	.445	98.5	S.S.E.	37	0.0	—	—				
21	50.0	.385	95.5	S.W.	69	0.0	—	—				
22	49.0	.390	90.5	N.N.E.	55	0.0	—	—				
23	50.0	.392	93.5	S.	63	1.0	14	7 P				
24	45.5	.360	87 0	S.	38	0.0	—	—				
25	44.0	.383	81.0	S.S.E.	61	0.5	10	3 P				
26	48.5	.438	82.0	S.	96	0.0	—	—				
27	49.5	.425	73.5	E.	76	0.0	—	—				
28	47.5	.403	81.0	S	47	0.0	—	—				
29	59.0	.542	91.5	S	140	1.5	17	2 P				
30	65.5	.692	91.5	S.S.W.	186	3.5	26	1 P				

**Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather for September was nearly normal in most respects giving a marked contrast with that of July and August. High humidity and much South wind however were much in evidence. Many foggy mornings were noted which made the relative humidity very high. Precipitation occurred on comparatively few days although two storms were very heavy. There was very little thunder and lightning in marked contrast with the preceding two months. No frost was noted at the station although frost on low ground in the vicinity was reported on several dates.

The records of the several weather elements show the following features of interest: The mean barometer was a very little lower than usual and the range of pressure about ten per cent more than normal.

The mean temperature was nearly normal and the maximum temperature, while more than two degrees less than usual, was higher than the August maximum. The minimum temperature was about two degrees higher than the average value for September.

The mean dew-point was nearly normal and the relative humidity about ten per cent more than the average value.

The total precipitation was about seventy per cent of the normal and more than one-half of it occurred during the heavy storm of the 19th.

The total wind movement was about three-fourths of the usual amount and the prevailing direction very unusual for this station.

The amount of sunshine was large and the cloudy days comparatively few.

J. E. OSTRANDER, Meteorologist

H. BAUMGARTNER, Acting Observer.

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BULLETIN No. 466. OCTOBER, 1927

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.05, 31st. 6A.
Minimum reduced to freezing,	28.83, 20th, 2 P.
Reduced maximum reading,	30.37, 31st, 6 A.
Reduced minimum reading,	29.13, 20th, 2 P
Mean semi-daily reduced	29.974
Monthly range	1.24

Air Temperature. In Degrees Fahr.

Highest	89.0, 2d, 3 P.
Lowest	24.0, 31st, 7 A.
Mean hourly	53.5
Mean of means of max. and min.	54.0
Mean sensible (wet bulb)	49.1
Monthly range	65.0
Highest mean daily	72.8, 1st
Lowest mean daily	41.8, 30th
Mean maximum	65.9
Mean minimum	42.1
Mean daily range	23.8
Greatest daily range	42.5, 26th
Least daily range	7.0, 9th

Humidity.

Mean dew point	46.2
Mean force of vapor	.397
Mean relative humidity	85.3

Precipitation. In inches.

Total precipitation, in inches	4.59
Number of days on which .01 inch or more rain fell	8

Wind.

Total movement	4082m
Greatest daily movement	279m, 4th
Least daily movement	42m, 20th
Mean daily movement	132m
Mean hourly velocity	5.5m

Maximum pressure per square foot, 12.5 lbs = 50m per hour, 21st, 12 M. N.W.

Maximum velocity for 5 minutes, 32m per hour, 21st, 10 A.. N.W.

Prevailing direction, South Southwest

Summary.

South	32 per cent
North	16 " "
Southwest	13 " "
South Southwest	10 " "
Other directions	29 " "

Weather.

Mean cloudiness observed	39 per cent
Total cloudiness recorded by the Sun Thermometer	126 hours = 37 per cent
Number of clear days	13
Number of fair days	13
Number of cloudy days	5

Bright Sunshine.

Number hours recorded. 215 = 63 per cent.

Rain. 3d, 4th, 7th, 8th. 9th, 13th, 17th, 19th, 20th.

Frosts. 11th, 15th, 16th, 24th, 30th, 31st.

Gales. 35m, 3d. S.; 40m, 4th, W.; 37m, 12th, S.; 45m, 13th, S.; 50m, 21st, N.W.; 42m, 22d, N.W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible Wet Bulb.	
1	30.12	30.02	30.107	86.5	4 P	61.5	6 A	74.0	72.8	66.5	10.2
2	30.16	30.07	30.122	89 0	3 P	59.0	6 A	74.0	71.3	65.5	8.0
3	30.12	29.77	30 003	79 0	3 P	61.5	3 A	70.3	69.1	66.0	7.0
4	30.08	29 50	29.788	73.5	1 A	54.0	12 P	63.7	69.9	58.5	7.7
5	30.24	30.08	30.209	70.0	3 P	47.5	6:30 A	58.7	58.5	53.5	10.0
6	30.27	30.16	30 218	80.0	3 P	43.5	7 A	61.7	61.3	54.0	9.8
7	30.16	29.90	30.023	79.0	3 P	55.5	1:30 A	67.3	65.5	63.2	7.0
8	30.06	29.90	30.010	66.0	4 P	48.0	12 P	57.0	58 4	52.0	5.0
9	30.06	29.92	30.003	48.0	0 A	41.0	6 A	44.5	45.3	43.7	0.0
10	30.18	29.90	30 010	60.0	1 P	37.0	5 A	48.5	47.4	41.2	9.5
11	30.32	30.18	30.294	63.5	3 P	28.0	6:30 A	45.7	45 6	41.7	9.5
12	30.28	29.80	29.978	72 0	1:30 P	40.0	7 A	56.0	56.6	51.5	5.0
13	29.96	29.68	29.783	68 0	4 P	47.0	12 P	57.5	60.3	56.7	3.7
14	30.25	29.96	30.120	62.0	3 P	42 0	7 A	52.0	50.5	46.7	8.7
15	30.34	30.25	30.294	60.0	4 P	35.5	7 A	47.7	46.8	41.5	10 0
16	30.26	30.06	30.131	62.0	3 P	30.0	6 A	46.0	45.9	41.5	6.8
17	30.09	30.04	30.079	58.0	12 M	44.5	5 A	51.3	50.6	48.2	1.3
18	30.04	29.53	29.765	55.0	1 P	47.0	3 A	51.0	50.9	48 5	0 5
19	29.53	29.20	29.247	69.0	3 P	50 5	1 A	59.7	56.4	53.7	5 5
20	29.30	29.13	29.142	56.0	1 P	45.0	6 A	50.5	51.0	50.3	0.0
21	29.50	29.15	29 336	56 0	10 A	48.5	1 A	52.3	50.8	48.7	8.9
22	29.69	29.50	29.614	55 0	3 P	39.0	12 P	47.0	47.1	42.3	8 0
23	29.81	29.67	29 778	62 5	2 P	32.0	7 P	47.3	44.1	34.7	7 8
24	30 00	29.81	29 936	59.0	2 P	29.5	7 P	44.3	43.8	37.3	8.5
25	30.18	30.00	30.171	60.0	2 P	29.0	6.30 A	44.5	43.2	37.0	9.2
26	30.18	30.09	30.161	73.0	3 P	30.5	5 A	51.7	49.8	42.7	9.3
27	30.25	30.12	30.224	66 0	3 P	38 0	7 A	52.0	50.8	45.0	7.8
28	30.12	29.84	29.953	74.5	3 P	47.5	7 A	61.0	57.0	52.5	5.0
29	30.20	29.86	30 054	62.0	3 P	41.0	12 P	51.5	52.4	44.5	9.0
30	30.36	30.20	30.344	57.0	4 P	28.0	12 P	42.5	41.8	32.5	8.5
31	30.37	30.20	30.300	61.0	2 P	24.0	7 A	42.5	43 9	40.0	7.5

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	64.5	752	81.5	S.	117	0.0	—	—				
2	64.0	.713	84.0	S.S.E.	60	0.0	—	—				
3	65.0	.676	93.0	S.	138	6.0	35	6 P	7:30 P	12 P	.35	
4	56.5	.594	78.5	S.W.	279	8.0	40	1 P	0 A	4 A	.81	
5	51.0	.463	81.0	S.W.	90	0.0	—	—				
6	52.5	.461	88.5	S.S.E.	111	1.0	14	6 P				
7	62.5	.608	96.0	S.	215	4.0	28	9 P	11 P	12 P	.02	
8	50.0	.426	85.0	N.	140	1.0	14	9 A	6 A	4 A	.32	
9	41.0	.293	88.5	N.E.	160	0.5	10	7 P	10 A	4 P	.45	
10	37.5	.287	79 5	S.	134	4.0	28	5 P				
11	39 0	.292	83.5	S	62	1.0	14	7 P				
12	49.5	.472	88.5	S	170	7.0	37	4 P				
13	56 0	.559	97 0	S.	245	10.0	45	1 A	0 A	9:30 A	1.95	
14	46.0	.327	96.5	N.N.W.	88	1.0	14	6 P				
15	40.0	.275	88 5	N.	105	0.5	10	10 A				
16	39.0	.284	93.5	S.S.W.	73	3.0	24	1 P				
17	52.0	.351	93.5	E.	82	0.5	10	11 P	8 A	10 A	T	
18	46.0	.371	84.0	N.E.	227	3.5	26	3 P				
19	52.5	.432	93.5	N.E.	187	5.5	33	12 M	8 A	10 A	.32	
20	50.0	.366	98.5	N.	42	0 0	—	—	9 A	7:30 P	.37	
21	46.0	.365	83.5	N.W.	201	12.5	50	12 M				
22	38.0	.304	76.5	W.	277	9.0	42	10 A				
23	30.0	.226	74.0	S.S.W.	55	0.0	—	—				
24	32.5	.258	75.5	S.W.	79	1 5	17	5 P				
25	34 5	.235	86.5	S.W.	80	3.0	24	11 A				
26	39.0	.320	77.0	S	73	1.0	14	2 P				
27	42.0	.340	80.0	S.	49	0.0	—	—				
28	50.0	.436	86.0	S.	123	1.5	17	4 P				
29	40.5	.337	76.0	N.	180	5.5	33	7 A				
30	26.5	.210	68.5	N.N.E.	133	1.5	17	11 A				
31	37.5	.281	89.0	S.S.W.	107	3.0	24	2 P				

** Rain or melted snow at base of tower. * Included in following day.

REMARKS

The weather during October was the most seasonable and agreeable so far this year. The amount of sunshine was very large and the last third of the month was free from rain. While the precipitation was considerably more than normal, most of it occurred during a few well defined storms. The storm on the morning of the 13th when nearly two inches fell in less than ten hours was exceptionally heavy for this locality. The barometer was unusually active and several rapid changes were recorded. The low reading on the 20th was quite abnormal. No frost was noted until the 11th, a rather late date for this station. Several gales were registered, a few of moderate intensity.

The mean barometer was unusually low for this time of year due to a marked depression from the 19th to the 23d. The range of pressure was large for the time of year. The maximum and minimum pressures were both much below their respective normals.

The mean hourly temperature was more than three degrees higher than usual, and the maximum temperature was ten degrees above the normal for this feature. The maximum temperature was considerably higher than the maximum for either August or September, and only two degrees lower than the maximum for July. The minimum temperature came on the morning of the last day of the month and was about a normal value.

The mean relative humidity was about ten per cent more than usual owing to the large amount of south wind. The mean dew-point was five degrees above the normal.

The total precipation was nearly an inch more than usual.

The total wind movement was about normal. The amount of sunshine was much more than the average and there were but few cloudy days.

J. E. OSTRANDER, Meteorologist

H. BAUMGARTNER, Observer.

BULLETIN No. 467. NOVEMBER, 1927

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.42, 13th, P.
Minimum reduced to freezing,	28.73, 4th, 6 A.
Reduced maximum reading,	30.73 13th, 10 P.
Reduced minimum reading,	29.02, 4th, 6 A.
Mean semi-daily reduced	30.085
Monthly range	1.71

Air Temperature. In Degrees Fahr.

Highest	70.0, 2d, 1 P.
Lowest	20.0, 10th, 7:30 A.
Mean hourly	44.0
Mean of means of max. and min.	43.9
Mean sensible (wet bulb)	41.0
Monthly range	50.0
Highest mean daily	64.2, 17th
Lowest mean daily	28.1, 20th
Mean maximum	52.3
Mean minimum	35.5
Mean daily range	16.8
Greatest daily range	32.5, 14th
Least daily range	6.0, 3rd

Humidity.

Mean dew point	38.8
Mean force of vapor	.297
Mean relative humidity	84.3

Precipitation. In inches.

Total precipitation, in inches	8.64
Number of days on which .01 inch or more rain fell	10

Wind.

Total movement	5213m
Greatest daily movement	456m, 17th
Least daily movement	65m, 9th
Mean daily movement	174m
Mean hourly velocity	7.2m

Maximum pressure per square foot, 17.0 lbs = 58m per hour, 17th, 7 P. S.S.W.

Maximum velocity for 5 minutes, 33m per hour, 11th, 7 P., S.S.W.

Prevailing direction, Southwest

Summary.

South	33 per cent
Northwest	17 " "
South Southwest	13 " "
Southwest	10 " "
Other directions	27 " "

Weather.

Mean cloudiness observed	72 per cent
Total cloudiness recorded by the Sun Thermometer	232 hours = 78 per cent
Number of clear days	1
Number of fair days	5
Number of cloudy days	24

Bright Sunshine.

Number hours recorded. 66 = 22 per cent.

Rain, 2d, 3d, 4th, 5th, 17th, 18th, 24th, 26th, 27th, 28th 29th.

Thunder and Lightning, 17th.

Snow, 10th.

Frosts, before the 16th 7th, 8th, 9th, 10th, 13th, 14th.

Gales, 42m, 3d, S.; 55m, 4th, W.S.W.; 35m, 7th, N.W.; 58m, 17th, S.S.W.; 49m, 18th, S.W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper	Mean Sensible Wet Bulb.	
1	30.23	30.09	30.183	69.5	4 P	45.0	4 A	57.3	55.2	52.0	1.2
2	30.09	29.85	29.992	70.0	1 P	44.0	7:30 A	57.0	58.8	54.2	3 6
3	29.85	29.28	29.570	66 0	12 M	60.0	10 P	63.0	62.8	62.8	0.0
4	29.45	29.02	29.236	61.0	0 A	39 5	8 P	50.3	48.2	45.2	0.3
5	27.76	29.41	29.698	50.0	3 P	32.5	7 A	41.3	41.9	38.8	5.4
6	29.83	29.73	29.794	45.0	12 M	29.5	12 P	37.3	39.2	36 0	0.5
7	30.22	29.81	30.070	40.0	2 P	28 0	12 P	34.0	34.5	31.0	6.0
8	30.32	30.22	30.296	41.5	1:30 P	20.5	7 A	31.0	31 0	27.0	6.5
9	30.46	30.23	30.368	37.0	4 P	25 0	4 A	31.0	29.7	26.2	0.0
10	30.56	30.30	30.459	44 0	3 P	20.0	7:30 A	32.0	33.8	34.2	4.0
11	30.30	30.08	30.169	56.0	3 P	43.0	0 A	49.5	49.3	47.2	0.3
12	30.29	29.89	30.052	58 5	3 P	41.5	12 P	50.0	51.3	48.2	2.0
13	30.73	30.29	30.676	47.5	3 P	28.0	12 P	37.7	37.3	31.2	8 5
14	30.72	30.46	30.613	54.0	3 P	21.5	7 A	37.7	39 4	33.2	7.3
15	30.46	30.28	30.360	60.5	3 P	47.5	0 A	54.0	54.5	53.5	0.3
16	30.28	30.03	30.124	64.5	4 P	52.0	3 A	58.3	59.0	59.0	0.3
17	30.03	29.58	29.758	68.5	4 P	60.0	12 P	64.3	64.2	64.5	0.0
18	30.01	29.57	29.806	60.5	4:30 P	33.5	12 P	47.0	44 8	39 8	1 2
19	30.25	30.01	30.154	36.0	3 P	27.0	12 P	31.5	32.1	28.3	1.9
20	30.38	30.25	30.369	36.5	3 P	23.0	6 A	29.7	28.1	24.0	1.6
21	30.37	30.20	30.254	42.5	3 P	22.5	4 A	32.5	34.4	32.3	0.0
22	30.24	30.07	30.130	51.0	3 P	38.0	0 A	44.5	45 5	43.5	0 0
23	30.12	29.93	30 021	63 0	3 P	45.5	1 A	54.3	53.9	48.5	0 0
24	30.21	29.98	30.104	48.0	0 A	35.5	7:30 A	41.7	39.3	36.5	0.0
25	30.28	29.98	30.162	41.0	2 P	31.0	12 P	36.0	35.8	32.0	1.0
26	30.37	30.17	30.287	47.0	3 P	26.5	6:30 A	36.7	36.7	33 7	5.5
27	30.17	29.90	29 958	50 5	4 P	42.5	0 A	46.5	46 9	47.3	0.0
28	30 34	30.08	30.259	42.5	1 P	31.0	7:30 A	36.7	37.5	31.5	3.2
29	30.12	29.80	29 898	59.0	2:30 P	34.0	0 A	46.5	43.0	39.0	3.5
30	30.00	29.47	29.738	59.0	1:30 P	37.5	5 A	48.3	50.2	48.3	1.5

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft.	Miles per Hour	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Total in Inches. Snow.
1	50.5	423	89.5	S.	90	0.5	10	11 P				
2	53.0	.464	91.5	S.	174	4.0	28	2 P	4 P	12 P	.30	
3	62.5	.577	98.5	S.S.E.	294	9.0	42	1 P	0 A	12 P	3.43	
4	45.0	.317	98.0	W.S.W.	199	15.0	55	9 A	6 A	10:30 A	1.90	
5	55.5	.250	90.5	S.	129	0.0	—	—	7 P	8 P	T	
6	31.0	.287	75.0	W.N.W.	168	4.5	30	4 P				
7	25.5	.195	74.0	N.W.	275	6.0	35	4 P				
8	18.5	.174	60.5	S.W.	84	0.0	—	—				
9	24.5	.156	75.0	N.	65	0.0	—	—				
10	23.0	.192	70.0	S.S.W.	85	1.0	14	7 P	2:30 P	3 P	T	T
11	46.0	.342	91.5	S.	165	1.5	17	4 A				
12	46.0	.352	88.0	W.	227	5.0	32	9 P				
13	26.5	.196	74.0	N.W.	204	4.0	28	2 A				
14	29.0	.230	71.0	S	129	3.5	26	5 P				
15	56.5	.434	91.0	S	199	3.0	24	12 M				
16	58.0	.517	95.5	S.	205	4.0	28	10 P				
17	64.0	.624	96.5	S.S.W.	456	17.0	58	7 P	8 A	12 P	1.02	
18	38.0	.256	91.0	N.W.	304	12.0	49	0 A	0 A	10 A	.48	
19	26.5	.175	73.0	N.W.	258	3.0	24	3 P				
20	16.5	.145	67.0	N.W.	127	1.0	14	5 A				
21	29.0	.201	83.0	S.S.W.	144	3.5	26	4 P				
22	41.0	.310	85.0	S	152	2.0	20	2 P				
23	44.5	.390	76.5	S.W.	144	2.0	20	10 P				
24	36.0	.222	96.0	N.N.W.	112	1.0	14	7 A	11 A	11 P	.68	
25	28.5	.195	81.0	N.	131	1.0	14	2 P				
26	31.5	.205	89.5	S.	100	3.5	26	9 P	9 P	12 P	.09	
27	46.5	.330	96.5	S.S.W.	234	3.0	24	5 A	0 A	11:30 A	.32	
28	27.5	.192	80.5	N.E.	180	5.0	32	6 A	4 P	12 P	.32	
29	36.0	.205	85.5	S.W.	111	3.0	24	12 M	0 A	7 A	.10	
30	47.5	.360	93.5	S.	168	4.5	30	11 P				

** Rain or melted snow at base of tower. * Included in following day.

REMARKS

The outstanding features of the weather for the month was the extremely heavy rainstorm of the first week of the month, when more than five and one-half inches of rainfall occurred in about 32 hours. This storm was so severe that the self-recording rain guage was put out of order and the rate of the rainfall was lost, after the first few hours. The standard guage, however, furnished a record of the total. Not since July, 1897, has so much rain occurred in so short a time. The remainder of the month had several moderate storms, making the total for the month more than two and one-half times the normal. An abnormal thunderstorm was recorded near the middle of the month.

The temperature recorded also was very unusual. The mean temperature was about five degrees more than normal, and the maximum and minimum temperatures about six degrees above their normal values for this month.

Passing to the humidity records we find that the mean dewpoint was about eight degrees higher than normal and the relative humidity about eight per cent above the average value.

The sunshine record was fully as abnormal as the other records mentioned. Less than one-fourth of the possible amount of sunshine was registered. One day was classed as clear, five as fair and twenty-four as either cloudy or overcast—an unequalled record here.

Finally the wind furnished some features of note with several heavy gales, a large movement for the month and an abnormal amount from the southwest quadrant. Assuredly the month was *abnormal.*

J. E. OSTRANDER, Meteorologist

H. BAUMGARTNER, Observer.

BULLETIN No. 468. DECEMBER, 1927

Meteorological Observations

AT THE

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

Latitude, 42° 23′ 48.5″ N. Longitude 72° 31′ 10″ W.

Height of barometer above ground, 51 ft. Above sea level, 273.5 ft.

Height of Wind Instruments 72 ft. Time used, 75th Mer.

MONTHLY SUMMARY.

Pressure. In inches.

Maximum reduced to freezing,	30.43, 4th, 8A.
Minimum reduced to freezing,	28.81, 16th, 9 P.
Reduced maximum reading,	30.76, 4th, 8 A.
Reduced minimum reading,	29.12, 16th, 9 P.
Mean semi-daily reduced	30.041
Monthly range	1.64

Air Temperature. In Degrees Fahr.

Highest	61.5, 1st, 2 A.
Lowest	8.5, 27th, 7:30 A.
Mean hourly	29.5
Mean of means of max. and min.	29.7
Mean sensible (wet bulb)	27.0
Monthly range	53.0
Highest mean daily	45.2, 8th
Lowest mean daily	15.5, 24th
Mean maximum	37.4
Mean minimum	21.9
Mean daily range	15.5
Greatest daily range	36.0, 8th
Least daily range	5.5, 13th

Humidity.

Mean dew point	23.1
Mean force of vapor	.165
Mean relative humidity	81.3

Precipitation. In inches.

Total precipitation, in inches	5.65
Number of days on which .01 inch or more rain fell	11
Total snow in inches	3½

Wind.

Total movement	5546m
Greatest daily movement	380m, 1st
Least daily movement	22m, 7th, 31st
Mean daily movement	179m
Mean hourly velocity	7.5m

Maximum pressure per square foot, 13.0 lbs = 51m per hour, 8th, 8 A. S.S.W.

Maximum velocity for 5 minutes, 30m per hour, 8th, 8A., S.S.W.

Prevailing direction, West Northwest

Summary.

West	19 per cent
North	13 " "
North Northwest	13 " "
North Northeast	10 " "
South Southwest	10 " "
West Northwest	10 " "
Northwest	10 " "
Other directions	15 " "

Weather.

Mean cloudiness observed	50 per cent
Total cloudiness recorded by the Sun Thermometer	183 hours = 65 per cent
Number of clear days	3
Number of fair days	11
Number of cloudy days	17

Bright Sunshine.

Number hours recorded. 100 = 35 per cent.

Rain, 2d, 4th, 5th, 7th, 8th, 11th, 13th, 14th, 16th, 23rd, 29th, 31st.

Snow, 2d, 4th, 5th, 11th, 13th, 16th, 23d.

Gales, 45m. 1st, N.W.: 47m, 4th; N.: 51m, 8th, S.S.W.: 35m, 14th, N.W.: 45m, 16th, N.W.

DAILY SUMMARY.

Day.	Barometer Reduced to Sea Level.			Temperature. Ground Shelter.							No. Hours of Bright Sunshine.
	Maximum	Minimum.	Mean. Semi-daily	Maximum	Time.	Minimum.	Time.	Mean of Max. and Min.	Mean Hourly Draper.	Mean Sensible and Wet Bulb.	
1	30.48	29.45	30.218	61.5	2 P	26.0	12 P	43.7	37.8	29.8	6.0
2	30.48	29.90	30.168	33.5	12 P	24.5	6 A	29.0	29.3	28.7	0.0
3	30.62	29.94	30 340	35.5	8 A	17.0	12 P	26.3	29.2	26.2	0.0
4	30.76	30.23	30.596	21.0	3 P	10.5	8 A	15.7	15.9	14.0	0.0
5	30.23	29.82	29.882	37.0	3 P	18.0	0 A	27.5	28.2	26.2	1.3
6	30.22	29.87	30.084	43.5	1 P	27.5	12 P	35.5	33.9	28.2	6.3
7	30.28	29.96	30.162	38.5	2:30 P	23.0	5 A	30.7	31.0	30.0	2.0
8	29.98	29.49	29.669	60.0	12 M	24.0	12 P	42.0	45.2	41.8	0 0
9	30.46	29.98	30.299	26.0	3 P	17.0	12 P	21.5	21.5	15.8	8.3
10	30.56	30.35	30.459	32.5	3:30 P	13.5	7:30 A	23.0	24 6	20.3	5.9
11	30.45	30.04	30.281	37.5	1 P	29.5	8 A	33.5	33.6	31.5	0.9
12	30.14	30.02	30.069	49.0	1 P	29.0	12 P	39.0	39.2	34.3	5.3
13	30.13	29.71	29 922	33.0	12 P	27.5	3 A	30.3	31.4	32.3	0.0
14	30.06	29.43	29.728	50.0	2:30 P	33.0	0 A	41.5	39.3	36.5	5.6
15	30.15	30.06	30.096	33.5	0 A	26.5	7:30 A	30.0	29.5	25.5	2.3
16	30.05	29.12	29.495	37.5	6:30 P	21.0	6:30 A	29.3	29.1	30 0	0.0
17	29.81	29.34	29 718	30.5	2:30 P	21.5	12 P	26.0	27.5	26.3	5.4
18	29.87	29.79	29.868	28.0	2 P	17.0	7 A	22.5	21.5	18.5	3.9
19	29.79	29.39	29 552	25.5	6 P	17.0	7 A	21.3	21.4	19.2	3.1
20	29.62	29.37	29.506	32.5	4 P	22.5	0 A	27.5	28 8	27.7	3.0
21	29.88	29.62	29.791	41.0	1 A	29 0	12 P	35.5	33.5	30.0	6.9
22	30.00	29.88	29.999	35.5	1:30 P	24.5	7 A	30.0	30.5	29.5	0.0
23	30.00	29.92	30.014	34.0	1:30 P	18 5	12 P	26.3	27.3	25.5	0.6
24	30.30	30.00	30.199	23.5	3 P	9.0	7:30 A	16.3	15.5	11.8	6.7
25	30.42	30.30	30.396	40.5	2:30 P	12.5	6 A	26.5	23.3	19.5	7.8
26	30.39	30.32	30.361	31.0	3 P	13.0	7:30 A	22.0	20.7	16.0	7 4
27	30.39	30.28	30.342	39 0	3 P	8.5	7:30 A	23.7	23.0	22 0	5.8
28	30.42	30.26	30.382	43.5	2:30 P	21.5	7:30 A	32.5	33.1	28.0	5.3
29	30.26	30.01	30 042	45.0	3 P	37.0	12 P	41.0	41.4	41.2	0.0
30	30.04	29.97	30.022	36.0	3 P	30.0	0 A	33.0	33.0	33.7	0.0
31	29.97	29.22	29.602	45.0	12 P	30.0	0 A	37.5	35.3	35.5	0.0

DAILY SUMMARY.

Day.	Humidity.			Wind.					Precipitation.			
	Mean Dew Point.	Mean Force vapor.	Mean Relative Humidity	Prevailing Direction.	Total Movement in Miles.	Maximum Pressure Per Square Ft	Miles per Hour.	Time.	Beginning.	Ending.	Total in Inches. Rain.**	Snow.
1	23.0	196	64.0	W.N.W.	380	10.0	45	1 P				
2	26.0	.166	86.0	E.	57	2.0	20	11 P	2 P	9:30 P	.78	T
3	21.0	.162	72.5	N.	223	5.0	32	2 P				
4	10.0	.090	81.0	N.N.E.	319	11.0	47	3 P	8 P	12 P	.23	½
5	21.5	.153	78.0	N.N.E.	198	2.0	20	2 A	0 A	10 A	.50	1
6	20.0	.177	62.5	W.	99	1.0	14	3 P				
7	25.5	.180	80.0	W.N.W.	22	0.0	—	—	8 P	12 P	.12	
8	37.5	.319	80.0	W.	341	13.0	51	8 A	6 A	9 A	.49	
9	5.0	.107	54.5	W.	247	3.5	26	2 P				
10	14.5	.124	70.5	S.S.W.	216	3.5	26	1 P				
11	29 0	.186	87.0	S.	140	2.0	20	8 P	3 P	8:30 P	.35	T
12	31.0	.214	82.0	S.W.	165	4.5	30	1 P				
13	31.5	.185	97.5	W.S.W.	30	0.0	—	—	5:30 A	11:30 A	.31	T
14	33.5	.233	83 0	N.	172	6.0	35	3 P	0 A	6:30 A	.76	
15	21.5	.148	80.0	N.	106	1.0	14	6 A				
16	29 0	.172	97.0	N.N.E.	126	10.0	45	11 P	2:30 A	11 P	.87	1¾
17	24.0	.148	89.0	W.N.W.	268	5.5	33	3 A				
18	14.0	.110	77.5	W.	170	2.0	20	2 P				
19	12.5	.117	69.5	N.W.	257	5.5	33	9 P				
20	24.5	.162	81.5	N.N.W.	370	5.0	32	5 P				
21	26.5	.178	82.0	N.N.W.	301	2.0	20	5 A				
22	27.0	.172	87.5	N.N.W.	128	0.0	—	—				
23	22.5	.147	85.0	N.W.	138	4.0	28	6 P	8:30 A	9 A	T	T
24	8.0	081	82.0	N.W.	331	5 5	33	11 A				
25	15.0	.116	80.5	N.N.W.	167	4.5	30	0 A				
26	11.5	.100	73.0	N.	147	1.0	14	11 A				
27	19 0	.136	85.5	W.	66	0.0	—	—				
28	24.0	.178	76.5	S.S.W.	77	0.5	10	11 P				
29	40 0	.266	94.0	S.S.W.	211	2.0	20	5 A	8 A	2:30 P	.35	
30	33.0	.189	100.0	S.S.E.	52	0.0	—	—				
31	35.0	.208	100.0	W.	22	0.0	—	—	9 A	12 P	.89	

** Rain or melted snow at base of tower. * Included in following day.

Annual Summary for 1927.

Pressure. In inches.

Maximum reduced to freezing, ... 30.66, Jan. 27th, 9 A.
Minimum reduced to freezing, ... 28.73, Nov. 4th, 6 A.
Maximum reduced to freezing and sea-level, ... 31.00, Jan. 27th, 9 A.
Minimum reduced to freezing and sea-level, ... 29.02, Nov. 4th, 6 A.
Mean semi-daily reduced to freezing and sea-level, ... 30.025
Annual range, ... 1.98

***Air Temperature.** In degrees Fahr.

Highest, ... 91.0, July 13th, 2-3 P.
Lowest, ... -12.0, Jan. 27th, 6 A.
Mean hourly, ... 47.6
Mean of means of max. and min., ... 47.9
Mean sensible (wet bulb), ... 44.2
Annual range, ... 103.0
Highest mean daily, ... 78.3, July 14th
Lowest mean daily, ... 1.9, Jan. 27th.
Mean maximum, ... 58.5
Mean minimum, ... 37.4
Mean daily range, ... 21.1
Greatest daily range, ... 45.0. Mar 17th.
Least daily range, ... 3.0, Jan. 21st.

Humidity.

Mean dew point, ... 41.3
Mean force of vapor, ...372
Mean relative humidity, ... 82.9

Wind.

Prevailing direction, ... West Southwest

Summary.

North . . . . . 11 per cent
South . . . . . 21 " "
Southwest . . . . . 9 " "
Northwest . . . . . 12 " "
Other directions, ... 47 " "
Total movement, ... 49,451 m
Greatest daily movement, . . . 506m., Feb. 4th
Least daily movement, 22m., Feb. 24th Dec. 7th, 31st
Mean daily movement, ... 136 m
Mean hourly velocity, ... 5.7 m
Maximum pressure per square foot, 45.0 lbs., = 95 m. per hour, Feb. 3d. 9 P. S.S.W.
Maximum velocity for 5 minutes, 42 m. per hour, Feb. 4th, 1 A., W.

Precipitation. In inches.

Total precipitation, rain or melted snow, . 46.96
Snow total in inches, ... 31.5
Number of days on which .01 or more rain or melted snow fell, ... 127

Weather.

Mean cloudiness observed, ... 53 per cent.
Total cloudiness recorded by Sun Thermometer, ... 2477 hrs.=55 per cent.
Number of clear days, ... 59
Number of fair days, ... 158
Number of cloudy days, ... 148

Bright Sunshine.

Number of hours recorded, 1984 hrs.=45 per cent

Dates of Frosts.

Last, ... May 3d
First, ... Oct. 11th

Dates of Snow.

Last, ... April 5th
First, ... Nov. 10th
Total days of sleighing, ... 57

Gales of 50 or More Miles Per Hour.

50 m. Jan. 15th, N.; 51 m. Jan. 31st, W.N. W.
95 m. Feb. 3d, S. S. W.: 57 m. Feb. 4th, W. 57 m., Feb. 20th, N. E.
63 m. Mar. 3d, N ; 53 m. Mar. 8th, W.
50 m. April 7th, N. W.; 57 m. April 11th. N. N. W.; 51 m. April 29th, W. N. W.
51 m. June 5th, S. S. W.
50 m. Oct. 21st N. W.
55 m. Nov. 4th, W. S. W.; 58 m. Nov. 17th, S.S.W.
51 m. Dec. 8th, S. S. W.

Temperature in ground shelter.

H. BAUMGARTNER,
Observer.

J. E. OSTRANDER,
Meteorologist.